Telephony.

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When the Telephone is Appreciated.

Some day an epic will be written about the heroism of the telephone operator. In all the stories of disasters by and tornado the last week the press dispatches often mention the fact that operators stayed at their posts in the exchanges to send warnings of the advancing death and ruin or to lend aid in the work of rescue.

A Dayton, Ohio, dispatch briefly says: "A telephone operator was the last to leave the building, and reported that the street was full of dead bodies floating by."

It was a telephone operator who sent the last news that came out of Dayton and gave information to Gov. Cox which enabled the executive to grasp the situation and start the rescue work.

The only communication on Tuesday between Hamilton, Ohio, and the outside world was a telephone circuit to Cincinnati.

Another Associated Press wire records: "The telephone operator at Liberty, Ohio, reiterated the story told by the Dayton operator. Just before the wire to Liberty failed the operator said the levee near the Main street bridge had just gone out and the water was pouring into the town like a tidal wave. He asked that aid be rushed to the town."

In many other towns where wind and water caused such loss of life and general havoc the timely warnings sent out over the wires saved many from death and proved how inestimably valuable is the telephone at such awful times of disaster.

In fact, these great cyclones and floods of the last week have shown that the telephone is more dependable than the telegraph in such upheavals. Both in Nebraska and in Ohio and Indiana, the first and most complete news from the stricken districts came from telephone headquarters. This also proved that the telephone men and women were on the job.

Unfortunately, of course, many telephone companies in the stricken districts have suffered great loss. Exchanges have been swept away, and outside construction has been wrecked. At this writing it is impossible to give even an approximate calculation of the loss to the companies of Ohio and Indiana, but that it will run into hundreds of thousands of dollars is undoubted. TELEPHONY extends sympathy to the companies so injured, and assures them of its willingness to do anything to help them in their hour of trouble. This publication can facilitate the shipping of apparatus and supplies needed for the speedy re-establishment of telehone service, and will gladly assist any company applying for such aid.

TELEPHONY is proud of the wonderful record of service and sacrifice made by telephone men and women as related in every press dispatch from the submerged cities. Like a well trained army, every one did his or her full duty, and, great as was the loss of life, it is certain that had it not been for the unswerving devotion to duty displayed by the telephone employes the list of dead would have been much more formidable.

Competition Again the Penalty for Inadequate Service.

For the second time the Public Service Commission, of California, has penalized a utility for failure to give adequate service to its patrons, by granting a certificate of "public convenience and necessity" to a competing utility.

The first case was that of the Pacific Gas & Electric Co. vs. the Great Western Power Co., reported by TELEPHONY some time ago. The present is that granting a franchise to the California-Michigan Land & Water Co.

Here again the commission enunciates the principle laid down in the former case that "public utilities must not wait until competition is at their doors before improving inefficient service and correcting unreasonable rates."

The commission goes on to say that it "finds that the failure of the existing company to render adequate service at reasonable rates has been gross and inexcusable." It also states that the applicant is in position to give the desired service and that it has already secured substantially all the customers of the existing company. Under those conditions the commission announced that it did not have the slightest hesitation in granting a certificate of public convenience and necessity to the competing company.

There Is Just One Easy Road

By HERBERT KAUFMAN

The man who lies down and the man who lies up and down eventually stay down—the one won't deliver what's expected of him, the other can't. They both want to buy success at illegal rates—they're taking too much discount. There's just one easy road—the hard, straight road. The little cut-offs—the smooth, twisting side paths—only seem safe; they're not meant to be walked on.

Ever since human folk began to reason, a certain percentage of misguided idiots have tried to get ahead by cutting over the quicksands. Occasionally some unusual man (who would have done twice as well if he'd "done" one-half as many) realizes fifty per cent. on his ability investment by "getting away" with more than the law allows; but even when he does hold it he lets go of something worth more—he overpays—he loses his self-respect.

The card sharper can't expect to retain both the cash and confidence of the community. The cheat can buy a few minor luxuries, but he must forego the real necessities of life. There are many things we never list as assets, and only weigh when they've gone away—which we only appreciate when they're out of reach. Money won't purchase more than food and clothes and excitement—peace, security and happiness aren't marketed as yet in shops.

Life's just a matter of farming—of finding fertile soil in a good field—of breaking ground and being patient. The harvesting comes at last—the main work must be done while the least results are showing.

Many a man has lost out just because he wasn't patient enough to wait until well planted endeavor had time to sprout. Thousands of careers have been ruined because a few bad habits weren't weeded out of a strong nature.

It's far better to endure a little deprivation during youth than much privation in old age. Springtime is the sowing season—you can't replant in winter. What goes into the past comes out of the future. Carelessness won't ripen into success. Laziness won't fructify into ease. Trickery won't breed eminence.

Millionaires are unmade, not created, at the gaming table. Every Wall street fortune is built out of a thousand Wall street misfortunes. Most of the men who buy silver-plated harness wore work-plated harness for a great many yesterdays.

Science has accomplished a lot of new things with water power and air power, but hasn't improved on man power. Nothing, so far in the history of humanity, has been discovered as an acceptable substitute for honest, steady labor.

Old Cyrus Simmons built a sizeable town before he stopped building wagons. He planned a great many stylish rigs in his day, and some rules. The rules hadn't much style to 'em, but they were as solid as his wheels; they didn't wobble. Whenever a candidate for future partnership stopped at the cashier's window for his first week's pay envelope, in addition to his wages he found a little red card of rules. Cyrus didn't copyright the rules, so you'll get a chance to profit by them, too.

Rule 1. Don't lie; it wastes my time and yours. I'm sure to catch you in the end, and that's the wrong end.

Rule 2. Watch your work, not the clock. A long day's work makes a long day short, and a day's short work makes my face long.

Rule 3. Give me more than I expect and I'll pay you more than you expect. I can afford to increase your pay if you increase my profits.

Rule 4. You owe so much to yourself that you can't afford to owe anybody else. Keep out of debt or keep out of my shops.

Rule 5. Dishonesty is never an accident. Good men, like good women, can't see temptation when they meet it.

Rule 6. Mind your own business and in time you'll have a business of your own to mind.

Rule 7. Don't do anything here whi h hurts your self-respect. The employe who is willing to steal for me is capable of stealing from me.

Rule 8. It's none of my business what you do at night; but, if dissipation affects what you do next day and you do half as much as I demand, you'll last half as long as you hoped.

Rule 9. Don't tell me what I'd like to hear, but what I ought to hear. I don't want a valet to my vanity, but I need lots of them for my dollars.

Rule 10. Don't kick if I kick. If you're worth while correcting, you're worth while keeping. I don't waste time cutting specks out of rotten apples.

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Tri-State Makes Excellent Report for Year 1912

Minnesota Independent Shows Gross Revenue for Year of Nearly a Million and a Half, with Operating Expenses of About 52 Per Cent.—Large Increases Made to System in Every Department—Territory Covered Widely Extended, 30 Towns Being Added

The annual report of the Tri-State Telephone & Telegraph Co., of St. Paul and Minneapolis, Minn., is just being mailed to the company's stockholders. It shows a strong financial position and records an exceedingly satisfactory growth for the year ended December 31, 1912.

The company found it necessary to make material increases in its toll lines and exchange equipment, as also in its underground plant. Some 1,400 miles of toll lines were added during 1912, new switchboards were installed and 37 miles of additional underground conduit laid, containing approximately 8,000 miles of wire in cables.

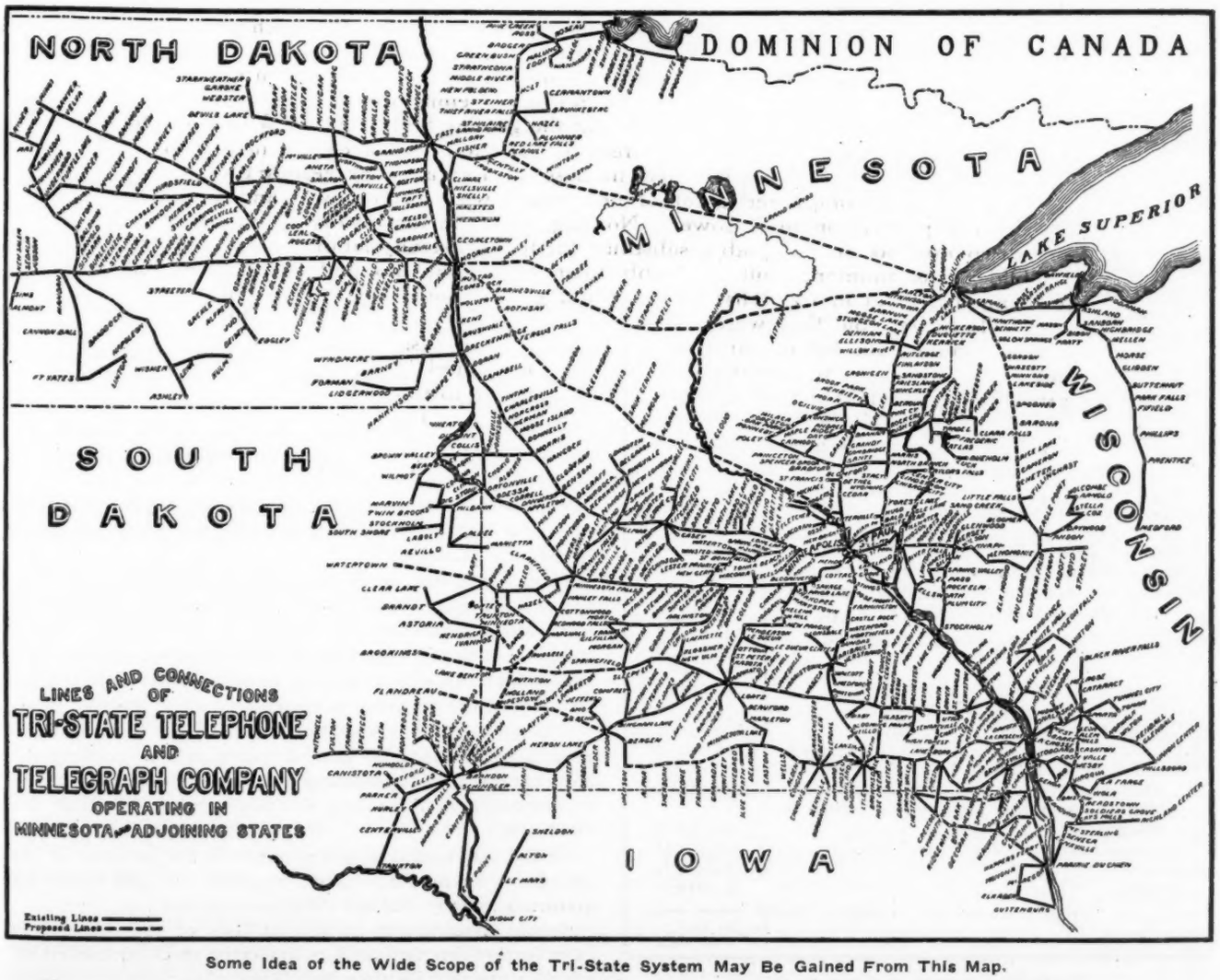
Added connections were accomplished with some 30 towns in the company's territory, in half of which service is interchanged with existing local companies. Eleven new franchises were secured and others are pending. Material gains were made in number of subscribers in the Twin Cities and the toll business showed an increase of 15 per cent. There were 900,392 toll calls handled last year.

Gains were recorded in gross revenue, the expenses being held at the ratio to gross which the company has maintained for many years, namely, about 52 per cent. The gross earnings were $1,476,570, operation, maintenance, general expense and taxes aggregating $771,375. Over $202,000 was expended in maintenance, which was charged to operating cost. The report of the directors, signed by E. H. Moulton, president, and G. W. Robinson, vice-president and treasurer, was as follows:

The physical properties, now owned and operated by your company, include 13 exchanges within the cities of Minneapolis and St. Paul, 36 exchanges located at various points throughout the state, and 2,925 miles of long distance pole line, connecting with 1,637 cities and villages.

During the year 1912 property has been acquired for two additional exchanges within the Twin Cities. On one of these properties there has been erected a modern, brick and concrete, fireproof building, in which work has been started for the installation of a modern exchange of sufficient capacity to care for a district of approximately 25,000 people.

During the early part of last year, when extensions were made to the switchboards in the Twin Cities, and in the larger towns throughout the state, it was thought that they were ample to properly care for the normal growth of business for some time to come. On account of the develop-



Some Idea of the Wide Scope of the Tri-State System May Be Gained From This Map.

ment, however, we find it necessary to make further additions during the ensuing year. Our toll boards at the long distance headquarters have been increased by about 25 per cent. in order to take care of the additional toll lines which were laid out for 1912; 50 per cent. of which were completed during that year. The balance will be completed early in the present year.

The demand for additional service in two of our magneto exchanges in the smaller cities, which have been in operation for some 10 or 12 years, has necessitated our re-equipping these exchanges with modern, up-to-date equipment of sufficient size to allow an increase of at least 50 per cent. within the next two or three years. These exchanges are now serving approximately 500 subscribers each.

During the year there has been added to our exchange system approximately 37 miles of underground conduit, and there has been installed in underground ducts approximately 8,000 miles of wire in cables. Our aerial cable plants have been increased by approximately 1,600 miles of wire.

Our toll system has been increased by approximately 1,400 miles of toll line.

REVENUE ACCOUNT.

For Year Ending December 31, 1912.

Income from operation	$1,455,378.16	
Income from sources other than opertaion	21,192.25	
Total income		$1,476,570.41
Operation, maintenance and general expense	$ 719,074.10	
Taxes—paid and accrued	52,301.55	
Interest on funded and floating debt (see below)	140,448.85	
Reserved for doubtful accounts	14,596.64	926,421.14
		$ 550,149.27
Cash dividends paid on preferred stock	$ 124,668.04	
Cash dividends paid on common stock	150,223.10	274,891.14
Balance available for surplus and reserves		$ 275,258.13
Appropriated to reserves	$ 175,258.13	
Appropriated to surplus	100,000.00	275,258.13

Note.—During the first six months of the year interest was paid on $2,441,000 of notes that were later funded into common stock.

GENERAL BALANCE SHEET.

As of December 31, 1912.

RESOURCES.

Plant and equipment, including real estate and buildings	$7,663,412.69
Securities owned	471,543.24
Material and supplies	149,920.96
Notes and accounts due from subscribers and affiliated companies	176,787.30
Cash	61,867.61
Other assets	58,089.75
	$8,581,621.55

CAPITAL AND LIABILITIES.

Common stock, issued and outstanding	$4,000,000.00
Preferred stock, issued and outstanding	1,972,460.00
Funded debt, assumed in the purchase of properties	1,162,550.00
Notes and accounts payable, including rediscounts	249,315.82
Accrued taxes, interest, dividends, etc	162,860.25
Reserves	719,435.48
Surplus	315,000.00
	$8,581,621.55

Tri-State Finances at Close of 1912.

These additions to the system have given us added connections with approximately 30 towns of importance throughout our territory; among which are such important cities as Crookston and St. Cloud. At 15 of these points we have connected with companies already in existence and serving approximately 4,500 square miles of territory.

In order to keep our properties in their usual state of high efficiency, it has been necessary to expend in maintenance a little over $202,000, all of which has been charged to operating expenses. This is entirely exclusive of the amount expended in renewal work, such as the replacing of any part of the plant that has become obsolete or worn out.

During the past year an examination of a large portion of our plant was made by a prominent consulting engineer from the East, and in his report he comments upon the general excellent condition of our plant, the character of our service, and the care exercised in keeping the plant in a state of high efficiency.

Realizing that the measure of success attained by any public service corporation is largely dependent upon its attitude toward its patrons and the public at large, the management has endeavored to create and maintain relations that would be mutually pleasant and satisfactory. Its success is tested by the very general support given the company by the public within the territory served.

Franchises have, during the past year, been obtained at Crookston, St. Cloud, Moorhead, Lake Benton, Tracy, Balaton, Lamberton, Russel, Tyler, Lynd and Walnut Grove, and others are now pending. The management expects shortly to announce additional long distance connections that will add materially to both the business and prestige of the company.

Very substantial gains in number of subscribers have been made both within and without the Twin Cities; and the long distance business shows an increase of about 15 per cent.—the number of toll messages handled being 900,392.

During the past year employes of the company—now numbering 1,381—have organized technical, athletic and social clubs that have not only added to their efficiency, but substantially raised the esprit de corps of the entire organization. To these activities the management has extended its unqualified approval and assistance, and in return has received from all employes that loyal support to which our success is largely due.

The financial statements submitted with this report make a showing that is particularly satisfying to the officers and directors of your company, and one that has created favorable comment in financial circles.

With a material increase in gross earnings the operating ratio has remained normal, and the net earnings correspondingly increased.

Plant extensions, amounting to about $400,000, have been successfully financed from the sale of preferred stock and from surplus earnings.

Our holdings of securities of connecting companies have been materially increased, thus greatly fortifying our position within the territory occupied.

A large indebtedness in the form of notes has, within the year, been successfully funded into common stock of the corporation, thus eliminating a heavy interest charge, and correspondingly increasing the net earnings available for dividends.

Of the outstanding bonds assumed in the purchase of the properties of the Twin City Telephone Co., and which are maturing serially, $25,000 have been retired.

Recent amendments to the by-laws of the corporation have further strengthened its preferred stock by conferring added protective features as follows:

1. Dividends are made cumulative.
2. In the event of liquidation this stock takes precedence over the common stock in the distribution of assets, as well as in the payment of dividends.
3. Without the consent of at least three-quarters of the preferred stock then outstanding, there shall be paid no dividends upon the common stock, unless the surplus earnings applicable to dividends for the preceding 12 months are at least two times the amount required to pay the preferred dividend upon the total amount outstanding at the date of the payment of the last preferred dividend.
4. The company cannot create or issue any shares of stock which shall take priority over the present preferred stock, without the consent of three-fourths of the preferred stock then outstanding.
5. Without the consent of three-fourths of the outstanding preferred stock the company cannot sell or dispose of its property, franchises, or business in their entirety.
6. The authorized issue of preferred stock cannot be increased without the consent of three-fourths of the preferred stock then outstanding; and of such increase there can only be issued an amount equal to 80 per cent. of the cost of properties acquired, extensions, or necessary improvements.
7. The preferred stock is redeemable in whole or in part, at the option of the company, on 60 days' notice at 110 and accrued dividends.

On January 1, 1913, the Interstate Commerce Commission assumed supervision over the accounting methods, the rates, and the service of telephone companies doing an interstate business. We welcome such supervision, believing that it will insure the stability of rates, improved service, and a much needed uniformity of accounting methods.

There is now pending in the Minnesota legislature a bill placing the intrastate business of telephone companies under the supervision of the Railroad and Warehouse Commission, of Minnesota. The securities of companies operating under such national and state supervision should be most attractive to conservative investors.

During the coming year, as in the past, it will be the policy of your directors to create and maintain sufficient reserves to properly care for the depreciation in the physical properties, and a surplus that will afford adequate protection to your securities.

Report of American Telephone & Telegraph Co. for 1912

Abstract of President T. N. Vail's Resume of Situation of Bell System, Including A. T. & T. Co. and Associated Operating Companies, for Year Just Closed—Condensed Statements Cover Details of Financial and Physical Condition of Organization

[EDITOR'S NOTE: Following is an abstract of the annual report of the American Telephone & Telegraph Co., signed by its president, T. N. Vail, showing the operations of that organization and its affiliated companies, for the year ended December 31, 1912. In the report is incorporated the letter of George W. Wickersham, then attorney general of the United States, to the Interstate Commerce Commission, in which he refers the entire question of telephone operation to that body. This has already appeared in full in these pages, as has also the formal order of the commission with reference to the investigation which it has undertaken, and which is a part of President Vail's printed report to his stockholders. The pension and disability fund, which is reviewed at length in the report, has previously been fully discussed by TELEPHONY.]

Bell Telephone System in United States.

At the end of the year the number of stations which constituted our system in the United States was 7,456,074, an increase of 823,449, including 344,173 connecting stations; 2,502,627 of these were operated by local, co-operative and rural Independent companies or associations having sublicense or connection contracts, so-called connecting companies.

The Bell telephone lines of the United States now reach 70,000 places, from many of which a telegraph message can be sent. The extent of the system is best realized by comparison with less than 65,000 post offices, 60,000 railroad stations and regular telegraph offices at about 25,000 places.

The total mileage of wire in use for exchange and toll service was 14,610,813 miles, of which 1,678,198 were added during the year. Of the total mileage over 12,400,000 miles were exchange wires, and nearly 2,200,000 toll wires. These figures do not include the mileage of wire operated by connecting companies. Of this total wire mileage 7,804,528 is underground, including 452,374 miles of toll wires in underground cables.

TRAFFIC.

Including the traffic over the long distance lines, but not including connecting companies, the daily average of toll connections was about 738,000, and of exchange connections about 25,572,000, as against corresponding figures in 1911 of 645,000 and 23,484,000; the total daily average for 1912 reaching 26,310,000, or at the rate of about 8,472,000,000 per year.

The figures in table No. 1 compare the telephone traffic with the two other branches of transmission of intelligence —the mail and the telegraph—in the United States and in Europe during the year 1911.

In other words, although Europe has about three and a half times the telegraph traffic of the United States, and nearly twice the first-class mail traffic, it has only two-fifths the telephone traffic of the United States.

Type of Message.	EUROPE Number During 1911	EUROPE Per Cent. of Total Europe	UNITED STATES Number During 1911	UNITED STATES Per Cent. of Total U. S.
First Class Mail Matter	16,500,000,000	72.2%	9,700,000,000	40.1%
Telegrams	370,000,000	1.6%	108,000,000	0.4%
Telephone Conversations	6,000,000,000	26.2%	14,400,000,000	59.5%
Total	22,870,000,000	100.0%	24,208,000,000	100.0%

Table No. 1.—Comparison of Telephone Traffic.

The use of the telegraph in Europe was about 2 per cent. of the mails, while in the United States it was but 1.2 per cent., the greater efficiency and distribution of the telephone causing the difference.

PLANT ADDITIONS.

The amount added to plant and real estate by all the companies, excluding connecting companies, constituting our system in the United States during the year 1912, was $75,626,929, distributed as follows:

Real estate	$ 9,814,180
Equipment	21,928,291
Exchange lines	30,837,778
Toll lines	14,269,640
Construction work in process	1,222,960*
	$75,626,929

*Decrease.

The amounts added in thirteen years have been as shown in table No. 2, making a total for the thirteen years of $592,043,300.

Estimates of all the associated operating companies and of the American Telephone & Telegraph Co. for all new

1900	$31,619,100	1907	$52,921,400
1901	31,005,400	1908	26,637,200
1902	37,336,500	1909	28,700,100
1903	35,368,700	1910	53,582,800
1904	33,436,700	1911	55,660,700
1905	50,780,900	1912	75,626,900
1906	79,366,900		

Table No. 2.—Plant Additions for Thirteen Years.

construction requirements in 1913 have been prepared. It is estimated that about $62,000,000 will be required for current additions to plant in 1913, of which amount some $30,000,000 will be provided by the existing and current resources of the companies.

During the year $66,705,000 was applied out of revenue to maintenance and reconstruction purposes; of this, over $15,000,000 was unexpended for those purposes.

The total provision for maintenance and reconstruction charged against revenue for the last 10 years was over $409,000,000.

Depreciation.

Each year adds emphasis to the necessity of providing fully for that depreciation which comes from obsolescence.

An idea of the changes in apparatus and operating methods that have taken place is most graphically set out in the engineering report. So gradual have these changes been and so gradual has been the improvement that it is hard to realize the extent of them. Any telephone engineer perfectly at home in a central office five years ago would be utterly lost in one today if he had not kept touch with the changes. The central office and substation apparatus and operating methods have been entirely changed, and yet there has been no wholesale scrapping of the apparatus as was customary in the early days. This possibility, however, will be continually present and the depreciation reserve must be fully ample to take care of it if and when it comes. In the meantime the reserve is invested in revenue-earning plant and the public is getting the advantage of the use of a large amount of plant upon which no dividend has to be earned.

Operating Results for the Year.

The accompanying tables show the business for the year of the Bell telephone system, including the American Telephone & Telegraph Co. and its associated holding and operating companies in the United States, but not including connecting Independent or sub-licensee companies, nor the Western Electric Co. and Western Union Telegraph Co., except as investments in and dividends from those companies are included respectively in assets and revenue. All inter-company duplications are eliminated in making up these tables so that the figures represent the business of the system as a whole in its relations to the public.

The gross revenue in 1912 of the Bell system—not including the connected Independent companies—was $199,200,000; an increase of nearly $20,000,000 over last year. (Table No. 3.) Of this, operation consumed $65,200,000; taxes, $10,300,000 or 1½ per cent. on the outstanding capital; current maintenance, $31,800,000; and provision for depreciation, $34,900,000.

The surplus available for charges, etc., was $56,900,000, of which $14,200,000 was paid in interest and nearly $29,500,000 was paid in dividends.

The total capitalization, including inter-company items and duplications, of the companies of the Bell system is $1,294,835,468. Of this, $568,976,849 is owned and in the treasury of the companies of the Bell system. The capital stock, bonds and notes payable outstanding in the hands of the public at the close of the year were $725,900,000. If to this be added the current accounts payable, $25,300,000, the total outstanding obligations of every kind were $751,200,000, as against which there were liquid assets, cash and current accounts receivable, of $73,400,000, leaving $677,800,000 as the net permanent capital obligations of the whole system outstanding in the hands of the public.

During the year 1912 careful appraisals of the physical property of all the companies in the Bell telephone system were made by the engineers and it was found that, whereas the book cost of the properties, as at August 1, 1912, was about $736,000,000, the cost of reproduction, as at the same date, exceeded $797,000,000. In other words, at the date named it would have cost about $61,000,000 more to replace the actual physical property than the amount at which it was then carried on the books of the companies.

This appraisal did not include any amount whatever for intangible assets, such as good will, patents, franchises, cost of developing the business or going concern values, all of which would still further increase the cost of reproduction by a large percentage.

The contracts and licenses account, which had been reduced to a small amount during previous years, was entirely written off during 1912.

For the year there was an increase in assets of $92,300,000, of which $75,600,000 represented current additions to plant, including the necessary real estate. This increase of $92,300,000 is represented by $65,800,000 increase in outstanding obligations for the whole system, and an increase in surplus and reserves

Bell Telephone System in United States.

Comparison of Earnings and Expenses, 1911 and 1912.

(All duplications, including interest, dividends and other payments to American Telephone and Telegraph Company by associated holding and operating companies, excluded.)

	1911.	1912.	Increase.
Gross Earnings	$179,477,998	$199,172,154	$19,694,156
Expenses—Operation	$ 60,085,425	$ 65,246,677	$5,161,252
Current Maintenance	30,184,522	31,762,636	1,578,114
Depreciation	28,655,832	34,942,802	6,286,970
Taxes	8,965,922	10,333,349	1,367,427
Total Expenses	$127,891,701	$142,285,464	$14,393,763
Net Earnings	$ 51,586,297	$ 56,886,690	$ 5,300,393
Deduct Interest	13,610,860	14,205,365	594,505
Balance Net Profits	$ 37,975,437	$ 42,681,325	$ 4,705,888
Deduct Dividends Paid	25,966,876	29,460,215	3,493,339
Surplus Earnings	$ 12,008,561	$ 13,221,110	$ 1,212,549

Combined Balance Sheets, 1911 and 1912.

(Duplications Excluded.)

ASSETS:	Dec. 31, 1911.	Dec. 31, 1912.	Increase.
Contracts and Licenses	$ 2,943,381	.....	$ 2,943,381*
Telephone Plant	666,660,702	$742,287,631	75,626,929
Supplies, Tools, etc.	20,749,568	23,601,262	2,851,694
Receivables	32,916,127	37,700,623	4,784,496
Cash	41,878,140	35,729,037	6,149,103*
Stocks and Bonds	66,777,231	84,942,265	18,165,034
Total	$831,925,149	$924,260,818	$92,335,669
LIABILITIES:			
Capital Stock	$379,727,832	$393,209,925	$13,482,093
Funded Debts	241,032,822	294,380,353	53,347,531
Bills Payable	41,198,431	38,268,341	2,930,090*
Accounts Payable	23,382,438	25,320,335	1,937,897
Total Outstanding Obligations	$685,341,523	$751,178,954	$65,837,431
Employees' Benefit Fund	.....	8,845,000	8,845,000
Surplus and Reserves	146,583,626	164,236,864	17,653,238
Total	$831,925,149	$924,260,818	$92,335,669

* Decrease.

Table No. 3.—Income Account and Balance Sheet.

of $26,500,000. Of this $26,500,0000 increase in surplus and reserves about $700,000 represents premiums on capital stock received through conversion of bonds, and $8,845,000 was set aside December 31 for employes' benefit funds hereinafter described.

All of the present surplus and reserves, aggregating over $164,000,000, is invested in tangible and productive property, the revenue from which enables the companies to maintain their efficiency without paying capital charges on this amount.

Your attention is called to a comparative statement of the Bell system for the years 1907 and 1912. (Table No. 4.) During that period the gross earnings have increased $70,600,000, of which $54,900,000 has been absorbed by increase in expenses, leaving an increase of $15,700,000 in net earnings. Of this increase in net earnings, $3,700,000 was taken for increase in interest and $11,300,000 for increase in dividends. The surplus in 1912 was $13,200,000, an increase of $700,000 over that of 1907.

During this 5-year period the assets of the companies have increased over $311,000,000, while the capital obligations and payables outstanding have increased only a little over $199,000,000. The surplus and reserves have increased from $61,300,000 to $164,200,000, nearly $103,000,000 after setting aside $8,845,000 for the employes' benefit fund.

Average Operating Units.

Table No. 5 shows average operating revenue and expenses per station, operating ratios, unit plant cost, etc., of the associated operating companies (not including the American Telephone & Telegraph Co.'s long-distance lines), for the years 1895, 1900, 1905, 1911 and 1912.

While the use of the subscriber's station as the unit of telephone statistics is open to the objection that we are using a standard which itself fluctuates, nevertheless it is the best standard or unit thus far obtainable and is therefore continued.

The steady decrease in revenue and increase in operation expense per subscriber's station—a striking feature in previous years and referred to in those reports—was checked in 1912, and slight gains over 1911 shown. There was, however, a small increase in the investment per station, to $143. In most respects the per station figures are close to those of 1910.

A comparison of these figures for 1895 and 1912 shows decreases of over one-half in the average cost to the subscriber for the service and of nearly that amount in the maintenance and depreciation as well as other expenses, leaving a net revenue per station of $9.29 in 1912 as against $23.52 in 1895. As, however, the plant cost per station had decreased almost one-half, the average net profits on the investment were but slightly affected. Moreover, this result was not secured at the expense of the maintenance and depreciation account, which was very nearly the same percentage of the plant investment in both years (and of the 1912 appropriations it has been shown that over $15,000,000 remained unexpended).

In other words, the Bell system, by its improvements in operation and organization, has cut in half the expenses not varying directly with the physical plant and, by its improvements in the art and its development of the business, has cut in half the investment per subscriber's station (and therefore the expenses dependent upon the physical plant); so that the average net profit to our companies is but slightly decreased although they receive less than one-half the former average revenue per subscriber's station for a greatly improved, more reliable and comprehensive service.

Our associated operating companies have settled into a steady

Bell Telephone System in United States.

Comparison of Earnings and Expenses, 1907 and 1912.

(All duplications, including interest, dividends and other payments to American Telephone and Telegraph Company by associated holding and operating companies, excluded.)

	1907.	1912.	Increase.
Gross Earnings	$128,579,800	$199,172,154	$70,592,354
Expenses:			
Operation	45,894,900	65,246,677	19,351,777
Current Maintenance	36,626,700	31,762,636	30,078,738
Depreciation		34,942,802	
Taxes	4,873,400	10,333,349	5,459,949
Total Expenses	$ 87,395,000	$142,285,464	$54,890,464
Net Earnings	$ 41,184,800	$ 56,886,690	$15,701,890
Deduct Interest	10,508,500	14,205,365	3,696,865
Balance Net Profits	$ 30,676,300	$ 42,681,325	$12,005,025
Deduct Dividends Paid	18,151,700	29,460,215	11,308,515
Surplus Earnings	$ 12,524,600	$ 13,221,110	$ 696,510

Combined Balance Sheets, 1907 and 1912.

(Duplications excluded.)

ASSETS:	Dec. 31, 1907.	Dec. 31, 1912.	Increase.
Contracts and Licenses	$ 9,078,000	.....	$ 9,078,000*
Telephone Plant	502,987,900	$742,287,631	239,299,731
Supplies, Tools, etc	17,165,200	23,601,262	6,436,062
Receivables	29,584,500	37,700,623	8,116,123
Cash	24,869,600	35,729,037	10,859,437
Stocks and Bonds	29,448,300	84,942,265	55,493,965
Total	$613,133,500	$924,260,818	$311,127,318
LIABILITIES:			
Capital Stock	$291,095,400	$393,209,925	$102,114,525
Funded Debts	196,113,700	294,380,353	98,266,653
Bills Payable	45,175,700	38,268,341	6,907,359*
Total Capital Obligations	$532,384,800	$725,858,619	$193,473,819
Accounts Payable	19,436,600	25,320,335	5,883,735
Total	$551,821,400	$751,178,954	$199,357,554
Employees' Benefit Fund	.....	8,845,000	8,845,000
Surplus and Reserves	61,312,100	164,236,864	102,924,764
Total	$613,133,500	$924,260,818	$311,127,318

* Decrease.

Table No. 4.—Comparison of 1907 with 1912.

Average Operating Units of Associated Operating Companies, 1895 to 1912.

(This table covers the companies owning all the exchanges and toll lines of the Bell Telephone System except the long-distance lines of American Telephone and Telegraph Co.)

Average per Exchange Station.

	1895.	1900.	1905.	1911.	1912.
EARNINGS:					
Exchange Service	$ 69.75	$ 44.68	$ 33.31	$ 30.85	$ 30.93
Toll Service	11.35	12.60	9.95	8.98	9.21
Total	$ 81.10	$ 57.28	$ 43.26	$ 39.83	$ 40.14
EXPENSES:					
Operation	$ 29.15	$ 21.63	$ 16.96	$ 15.36	$ 15.17
Taxes	2.23	2.37	1.49	1.94	2.02
Total	$ 31.38	$ 24.00	$ 18.45	$ 17.30	$ 17.19
Balance	$ 49.72	$ 33.28	$ 24.81	$ 22.53	$ 22.95
Maintenance and Depreciation	$ 26.20	$ 17.68	$ 13.91	$ 13.41	$ 13.66
Net Earnings	$ 23.52	$ 15.60	$ 10.90	$ 9.12	$ 9.29
Per Cent. Operation Expense to Telephone Earnings	35.9	37.8	39.2	38.6	37.8
Per Cent. Telephone Expense to Telephone Earnings	71.0	72.8	74.8	77 1	76.9
Per Cent. Maintenance and Depreciation to Average Plant, Supplies, etc.	9.1	8.4	8.9	9.2	9.3
Per Cent. Increase Exchange Stations*	15.7	26.5	24.5	10.8	10.5
Per Cent. Increase Miles Exchange Wire*	15.9	33 2	27.2	12.3	14.3
Per Cent. Increase Miles Toll Wire*	21.3	25.2	12.4	6.5	6.2
Average Plant Cost Per Exchange Station (including Exchange and Toll Construction)	$260	$199	$145	$141	$143
Average Cost per Mile of Wire (Toll) (including Poles and Conduits)	$ 81	$ 71	$ 62	$ 68	$ 71
Per Cent. Gross Telephone Earnings to Average Plant	33.4	31 7	31 7	28 7	28.9
Per Cent. Net Profits to Average Capital Stock	10.11	9.44	8.34	7.93	8.34
Per Cent. Dividends to Average Capital Stock	5.07	6.19	5.75	6:30	6.35

* Increase during year shown, over previous year.

Table No. 5.—Analysis of Operating Units.

stride and in normal years the rate of growth requires only a normal amount of new construction and reconstruction. The sales of the Western Electric Co. to the associated companies have, therefore, not recently been subject to violent fluctuations and in the past year did not differ materially from those of 1911. Sales to other customers have been increased. While the rate of net profit on the investment in the business is not as large as is earned by other electric manufacturing companies, it is sufficient to pay interest on the bonds and the regular rate of dividends and provide the reserve which such a business requires.

Doings of A. T. & T. Co. Only.

The net earnings of the American Telephone & Telegraph Co. were $37,907,644.26, an increase of $4,606,398.49 over 1911. The interest charges were $5,844,698.86, and the dividends at the regular rate of 8 per cent. per annum were $26,015,587.76. Of the balance, $6,047,357.64, there was carried to reserves $2,800,000.00 and to surplus $3,247,357.64.

During the year $13,652,000 of new stock was issued under the offer of June 20, 1911. In addition, $2,726,200 of stock was issued upon conversion of bonds, making the total increase of capital stock during 1912, $16,378,200.

At the close of business December 31, 1912, $132,998,000 of the $150,000,000 of convertible bonds of 1906 had been handed in for conversion, leaving outstanding at the end of the year $17,002,000, a reduction in 1912 of $3,457,000.

The number of shareholders, 50,297, on December 31, 1912, shows an increase of 2,956 during the year. That the distribution is general appears from the following:

43,553 held less than 100 shares each;
6,354 held from 100 to 1,000 shares each;
356 held from 1,000 to 5,000 shares each;
19 held 5,000 shares or more each (omitting brokers, holders in investment trusts, etc.).

Of the holders of less than 100 shares each,
9,450 held 5 shares or less each;
31,953 held 25 shares or less each.

The average number of shares held was 66. A majority of the company's shareholders are women. Less than 7 per cent. of the stock was at December 31 in the names of brokers.

The issue of convertible bonds authorized at the meeting of January 30, 1913, was offered to the shareholders and over 97 per cent. was subscribed for. The payments have been very largely made on the one-payment plan.

In pursuance of the plan in view at the time of the offer to acquire the stocks of the Western Telephone & Telegraph Co., that company was liquidated in 1912, its assets (consisting almost wholly of stocks and notes of associated companies) being purchased by this company at a price which gave the stockholders about the same amounts as our offer referred to above. As a part of this plan this company guaranteed the $10,000,000 outstanding 5 per cent. bonds of the Western Telephone & Telegraph Co., secured by collateral which became the property of this company upon the above purchase.

Following the rearrangement of territories of the associated companies, and of their organizations to conform thereto,—described in previous reports and now practically completed—satisfactory progress was made during the year in rearranging the financial structure of various groups. These changes have occasioned considerable changes in this company's holdings of stocks and notes of the associated companies, and explain the greater part of the gain of $41,000,000 in stocks shown in the balance sheet and an increase of less than $8,000,000 in notes held, large amounts of this company's note holdings having been exchanged for stock. With small exceptions, new capital secured by these companies, other than from this company, during 1912, was secured by the issue of bonds.

The total outstanding capital stock and bonds of the Amer-

	Dec. 31, 1895.	Dec. 31, 1900.	Dec. 31, 1905.	Dec. 31, 1910.	Dec. 31, 1911.	Dec. 31, 1912.	Increase, 1912.
Miles of Exchange Pole Lines	25,330	30,451	67,698	120,175	131,379	143,842	12,463
Miles of Toll Pole Lines	52,873	101,087	145,535	162,702	163,351	171,161	7,810
Total Miles of Pole Lines	78,203	131,538	213,233	282,877	294,730	315,003	20,273
Miles of Underground Wire	184,515	705,269	2,345,742	5,992,303	6,831,667	7,804,528	972,861
Miles of Submarine Wire	2,028	4,203	9,378	24,636	26,936	30,301	3,365
Miles of Aerial Wire	488,872	1,252,329	3,424,803	5,625,273	6,074,012	6,775,984	701,972
Total Miles of Wire	675,415	1,961,801	5,779,918	11,642,212	12,932,615	14,610,813	1,678,198
Comprising Toll Wire	215,687	607,599	1,265,236	1,963,994	2,060,514	2,189,163	128,649
Comprising Exchange Wire	459,728	1,354,202	4,514,682	9,678,218	10,872,101	12,421,650	1,549,549
Total	675,415	1,961,801	5,779,918	11,642,212	12,932,615	14,610,813	1,678,198
Total Exchange Circuits	237,837	508,262	1,135,449	2,082,960	2,306,360	2,576,789	270,429
Number of Central Offices	1,613	2,775	4,532	4,933	5,014	5,182	168
Number of Bell Stations	281,695	800,880	2,241,367	4,030,668	4,474,171	4,953,447	479,276
Number of Bell Connected Stations*	27,807	55,031	287,348	1,852,051	2,158,454	2,502,627	344,173
Total Stations	309,502	855,911	2,528,715	5,882,719	6,632,625	7,456,074	823,449
Number of Employees	14,517	37,067	89,661	120,311	128,439	140,789	12,350
Number of Connecting Companies, Lines and Systems				17,845	21,454	24,013	2,559
Exchange Connections Daily	2,351,420	5,668,986	13,543,468	21,681,471	23,483,770	25,572,345	2,088,575
Toll Connections Daily	51,123	148,528	368,083	602,539	644,918	737,823	92,905

*Includes Private Line Stations.

Table No. 6.—Condensed Statistics Concerning Bell System in the United States.

ican Telephone & Telegraph Co., at December 31, 1912, were as follows:

Capital stock	$334,805,700
4 per cent. collateral trust bonds	78,000,000
4 per cent. convertible bonds	17,002,000
5 per cent. Western Tel. & Tel. Co. bonds	10,000,000
Total	$439,807,700

For the $334,805,700 capital stock, $356,732,218 has been paid into the treasury of the company; the $21,926,518 in excess of par value represents premiums. All discounts on the bond issues have been charged off. The outstanding capital obligations therefore represent nearly $22,000,000 more than their par value.

ENGINEERING.

During the year 1912 great benefit has resulted in all parts of the country from the activities of the large engineering staff which is maintained at headquarters to work out for the associated companies problems of their plant and service. A number of important engineering developments have been initiated and many of great value have been well advanced toward completion, but have not yet reached the stage where they can be described. While a large number have been completed, a very important part of the year's progress has consisted in putting into effect in the plant and service of the associated companies those numerous improvements which have recently been developed and standardized.

A plant such as the telephone system of the United States must be so designed and constructed that at all times it may be kept in a healthy condition of growth. This growth means not only change in size but also change in form, to meet not only conditions of increased magnitude, but also to conform by natural modifications in structure to the advancing requirements of the service which are becoming more numerous, more complex and more exacting. The telephone plant, in all its parts, must ever be subject to a process of evolution tending always to a higher and higher type. Its capabilities of responding to these advancing requirements furnish a good test of its design and efficiency and value. A study of the engineering operations for the year shows that the plant of the Bell system has been designed and constructed so as to withstand this test and that it is capable of responding to every reasonable demand that may be made upon it and of continuing to grow indefinitely not only in size but in constantly increasing efficiency and usefulness.

Experience with the engineering devices and methods employed in the New York-Denver line, referred to in last year's

	Dec. 31, 1885.	Dec. 31, 1890.	Dec. 31, 1895.	Dec. 31, 1900.	Dec. 31, 1905.	Dec. 31, 1910.	Dec. 31, 1912.
ASSETS:							
Contracts and Licenses.	$16,732,100	$18,925,700	$20,005,300	$14,794,300	$13,313,400	$2,943,381	$
Telephone Plant	38,618,600	58,512,400	87,858,500	180,699,800	368,065,300	610,999,964	742,287,631
Supplies, Tools, etc	348,500	1,021,800	1,810,000	6,464,400	11,069,500	20,987,551	23,601,262
Receivables	1,450,900	1,761,600	3,746,600	13,644,000	26,220,800	26,077,802	37,700,623
Cash	1,792,600	1,183,300	2,484,100	3,223,000	11,005,900	27,548,933	35,729,037
Stocks and Bonds	1,138,800	2,697,400	4,480,500	11,400,400	23,041,200	64,766,089	84,942,265
Total	$60,081,500	$84,102,200	$120,385,000	$230,225,900	$452,716,100	$753,323,720	$924,260,818
LIABILITIES:							
Capital Stock	$38,229,200	$43,792,800	$57,462,700	$130,006,900	$238,531,100	$344,645,430	$393,209,925
Funded Debts	367,400	6,473,100	10,074,100	44,137,900	93,079,500	224,791,696	294,380,353
Bills Payable	2,618,900	1,323,000	2,000,000	7,000,000	35,000,000	42,566,943	35,268,341
Accounts Payable		3,301,100	6,138,000	13,583,300	22,407,500	21,721,125	25,320,335
Total Outstanding Obligations	$41,215,500	$54,890,000	$75,674,800	$194,728,100	$389,018,100	$633,725,194	$751,178,954
Employees' Benefit Fund							8,845,000
Surplus and Reserves	18,866,000	29,212,200	44,710,200	35,497,800	63,698,000	119,598,526	164,236,864
Total	$60,081,500	$84,102,200	$120,385,000	$230,225,900	$452,716,100	$753,323,720	$924,260,818

Table No. 7.—Combined Balance Sheets at Five Year Intervals—All Duplications Excluded.

	Year 1885.	Year 1890.	Year 1895.	Year 1900.	Year 1905.	Year 1910.	Year 1912.
Gross Earnings	$10,033,600	$16,212,100	$24,197,200	$46,385,600	$97,500,100	$165,612,881	$199,172,154
Expenses	5,124,300	9,067,600	15,488,400	30,632,400	66,189,400	114,618,473	142,285,464
Net Earnings	$4,909,300	$7,144,500	$8,708,800	$15,753,200	$31,310,700	$50,994,408	$56,886,690
Interest	27,700	278,700	655,500	2,389,600	5,836,300	11,556,864	14,205,365
Balance	$4,881,600	$6,865,800	$8,053,300	$13,363,600	$25,474,400	$39,437,544	$42,681,325
Dividends	3,107,200	4,101,300	5,066,900	7,893,500	15,817,500	25,160,786	29,460,215
Surplus Earnings	$1,774,400	$2,764,500	$2,986,400	$5,470,100	$9,656,900	$14,276,758	$13,221,110

Table No. 8.—Comparative Earnings at Five Year Intervals of Bell System in United States.

report, having demonstrated their value under severe practical conditions, a systematic introduction of these improvements was undertaken and actively prosecuted throughout the United States, so that, at the end of 1912, there was a total of 54,750

ASSETS.		
Stocks of Associated Companies	$447,017,318.04	
Bonds of Associated Companies	581,000.00	
Capital Advances to Associated Companies	60,623,823.35	$508,222,141.39
Telephones	$13,286,161.53	
Real Estate	507,359.00	
Long-Distance Telephone Plant	48,635,006.21	62,428,526.74
Cash and Deposits		21,809,651.22
Special Demand Notes		10,730,824.86
Current Accounts Receivable		3,570,944.98
		$606,762,089.19
LIABILITIES.		
Capital Stock	$334,805,700.00	
Capital Stock Instalments	675.00	$334,806,375.00
4% Collateral Trust Bonds, 1929	$78,000,000.00	
4% Convertible Bonds, 1936	17,002,000.00	
5% Western T. & T. Co. Bonds, 1932	10,000,000.00	
5% Coupon Notes, 1907	5,000.00	
Indebtedness to Western Union Telegraph Co. for New York Telephone Co. Stock Payable 1913 to 1915	6,000,000.00	
Notes to Associated and Allied Companies	28,682,900.00	
Notes of Associated Companies Discounted	20,300,000.00	159,989,900.00
Dividend Payable January 15	$6,696,114.00	
Interest and Taxes Accrued, but not due	2,488,886.25	
Current Accounts Payable	1,066,260.31	
Reserve for Unearned Revenue	1,648.62	10,252,909.18
Employees' Benefit Fund		2,000,000.00
Reserve for Depreciation and Contingencies	$40,193,109.14	
Surplus	59,519,795.87	99,712,905.01
		$606,762,089.19

Table No. 9.—Balance Sheet, A. T. & T. Co., Dec. 31, 1912.

miles of the heaviest-gauge wires equipped with the new arrangement, thus doubling their transmission efficiency and, in addition to this, there were obtained, without any expenditure for new wires, phantom circuits equivalent to 12,600 miles of the heaviest-gauge circuit. These improvements have brought into communication with each other places formerly too remote, and between a great number of places less remote, noteworthy improvements in the service have been reported.

Engineering plans have been completed for the extension of four heavy copper wires from Denver to San Francisco and construction work is to commence as soon as the weather permits.

The extraordinary increase in the number of the telephone wires and the difficulty of obtaining additional space underground in many places have emphasized the importance of utilizing every underground duct to its fullest capacity. This could only be accomplished through improvements in cables. Heretofore, 600 pairs of wires have been the largest number which it has been practicable to employ. Experiments were completed during the year and specifications prepared for a new type of cable providing 900 pairs, or 1,800 wires, in the space which was formerly required for 600 pairs. This will result not only in great economies in the use of cables, but also in large economies in the construction and utilization of underground conduits.

Engineering work has been done during the year upon 29 telephone central office buildings and 162 central office equipments for the various associated companies. The most important of these central stations is the large new telephone and telegraph building in New York City, which is rapidly approaching completion. This is to be the largest building used for housing telephone and telegraph central office equipments and operating rooms. It will contain two telephone central offices of 10,000 lines each, the long-distance switchboard and operating headquarters, and a new operating room and equipment for the Western Union service. The engineering plans and specifications for this work have been completed, so that the installation of the apparatus and wires may commence as soon as the building is ready.

The insurance department has, in conjunction with the engineering department, inspected during the year 290 central office buildings of the associated companies and, where necessary, made recommendations for reducing as far as possible the fire risk in addition to studying the plans for new buildings and additions to existing buildings, with a view to embodying in their construction the best ideas for obtaining safety and reducing the fire hazard and the insurance rates.

The work of making and revising fundamental plans for the associated companies was actively continued during the year, 21 such plans having been made or revised for as many cities and for a growth in those cities of more than 600,000 stations.

Acting for the associated companies, the engineering department has co-operated with state commissions and with national engineering societies in the development of the best methods of constructing and operating electric light and power and railway wires so as to avoid interference with telephone and telegraph circuits.

The results of the latest scientific developments of the general engineering staff in the art of speech transmission have been placed at the disposal of the associated companies in the form of general bulletins, and special advice has been given in numerous specific cases. Bulletins also containing results of the latest developments and improvements in building plans, traffic engineering practice, best methods of local and toll operating, standard central office equipment, and insurance and fire protection matters have been issued.

Many Changes in Apparatus.

In the numerous and diverse parts of the instruments and apparatus which constitute the plant of the associated companies, more than one thousand changes in standards have been made, producing in the plant or service improvements in economy and efficiency.

In judging of the importance of this work to the associated companies, it is in most cases impossible to set down its value in dollars and cents, but in some instances it is possible to give some indication of its value in the form of figures. This is true in the case of an improvement made during the year in aerial cables. The large savings reported last year as resulting from the improvement in cable sheaths applied to underground cables only. On account of peculiar conditions affecting overhead cables, particularly those causing vibration in the cable and a tendency to crystallization in the alloy of the sheath, the improvement could not be applied to aerial cables. Development work upon this subject during the year has been so successful that now it is possible to use an improved and less expensive alloy in the sheaths of overhead cables as well as underground cables. This results in an additional saving to the associated companies in the first cost of construction of more than $300,000 each year.

Another instance is the saving resulting from the further introduction of the so-called single ticket method of operating toll lines, the extension of which method in the service of the associated companies during the past year will bring about economies of operation amounting to several hundred thousands of dollars per annum.

Other improvements introduced in the service are new forms of cord circuits for local and trunk line work; improvements in local operating efficiency; improvements in toll line efficiency; improvements in toll cord circuits; improved forms of relays for switchboards, and improved switchboard cords. While all of these represent substantial gains in efficiency, they also represent important economies which, according to a conservative estimate, amount to more than a million dollars a year.

Savings Do Not Always Appear.

Although the total savings from such work as this are real and accrue from year to year and are much larger than any figures which have been set down here, it is in most cases impossible to trace them in the books of the companies for the reason that so often the result has been that the saving has appeared in the form of improved service without a corresponding increase in rates. Even where the savings are direct and tangible, it is often impossible to find them in the books. This is well illustrated in the case of the very substantial and definite saving resulting from the improvement in cable sheaths for overhead cables. An examination of the books would show that cables actually cost very much more even after this improvement than before. The explanation of this is found in the large increase in the cost of the other raw materials entering into the construction of the cables. The effect of such savings as this, therefore, is to prevent the total costs from rising as high as they otherwise would.

We too feel the high cost of living. The energies of the entire headquarters staff, not only of the engineering department, but the administrative, financial, accounting and other departments, have been directed to this problem. The result is, up to the present at least, that, while the costs of labor, raw material and commodities in general have been mounting higher and higher, telephone rates have not been increasing in proportion, but on the contrary, taking the rates throughout the country as a whole, the trend has been downward. This has been accomplished without restricting or impairing the service or cutting wages. On the contrary, we have done it at the same time that we have provided a greatly enlarged and more efficient plant and a more extended, efficient and amplified service, and in the face of increased wages and increased expenditures for welfare work.

Legal Affairs.

The legal department of the American Telephone & Telegraph Co. is a centralized bureau for the record and dissemination of information on all legal subjects which are of special interest to the associated companies. It issues for their use periodical bulletins containing all new court cases of interest, and also other bulletins giving the orders, ruling and decisions affecting telephone and telegraph companies made by all the commissions in the United States. It also issues, in book form, the telephone and telegraph cases decided by commissions, and a volume for each state of the statutes relating to telephone and telegraph companies, which is revised as new legislation is enacted. It has experts on all legal matters which are of special interest to the associated companies, and furnishes information, briefs and documents to their counsel. These experts visit the associated companies and assist in the preparation and argument of difficult cases. In view of the size and extent of our system and operations, the amount of litigation in the state and federal courts is small.

Earnings:	1911.	1912.
Dividends	$20,844,398.53	$24,247,430.02
Interest and other Revenue from Associated Companies	10,462,786.70	12,523,084.45
Telephone Traffic (net)	4,979,231.92	5,472,812.66
Other Sources	683,812.62	474,665.62
Total	$36,970,229.77	$42,717,992.75
Expenses	3,668,984.00	4,810,348.49
Net Earnings	$33,301,245.77	$37,907,644.26
Deduct Interest	5,567,980.30	5,844,698.86
Balance	$27,733,265.47	$32,062,945.40
Dividends Paid	22,169,449.79	26,015,587.76
Balance	$5,563,815.68	$6,047,357.64
Carried to Reserves	$2,800,000.00	$2,800,000.00
Carried to Surplus	2,763,815.68	3,247,357.64
	$5,563,815.68	$6,047,357.64

Table No. 10.—Comparative Income Account, A. T. & T. Co.

Relations with Commissions.

In addition to the Interstate Commerce Commission, there are now commissions with jurisdiction over telephone companies in 33 states. Many matters involving our plant and business are brought before these bodies from time to time, and the legal and other representatives of the company are cooperating with the commissions in an effort to meet all questions arising, in such a manner as to insure the improvement, development and extension of the service on terms just to all parties.

Year.	Net Revenue.	Dividends Paid.	Added to Reserves.	Added to Surplus.
1900	$5,486,058	$4,078,601	$937,258	$470,198
1901	7,398,286	5,050,024	1,377,651	970,611
1902	7,835,272	6,584,404	522,247	728,622
1903	10,564,665	8,619,151	728,140	1,217,374
1904	11,275,702	9,799,117	586,149	890,435
1905	13,034,038	9,866,355	1,743,295	1,424,388
1906	12,970,937	10,195,233	1,773,737	1,001,967
1907	16,269,388	10,943,644	3,500,000	1,825,744
1908	18,121,707	12,459,156	3,000,000	2,662,551
1909	23,095,389	17,036,276	3,000,000	3,059,113
1910	26,855,893	20,776,822	3,000,000	3,079,071
1911	27,733,265	22,169,450	2,800,000	2,763,815
1912	32,062,945	26,015,588	2,800,000	3,247,357

Table No. 11.—A. T. & T. Co. Annual Earnings and Dividends.

The relations of our companies with the public and with the supervising commissions have continued, on the whole, to be satisfactory. It would be impracticable to review the many orders, rulings and decisions made during the year, but most of them have been favorable and none, it is believed, will have the effect of permanently retarding the development of the business along the lines which have been adopted as the policy of the company.

The New Jersey commission has sustained our rates in Camden, and elsewhere throughout southern New Jersey, as just and reasonable.

The Ohio commission has sustained our objection to compulsory physical connection with another company operating in localities where we were already rendering service, and where the effect of such a requirement would be to make our facilities available to such other company, without the justification of a public necessity.

The attorney general of the United States has, during the year, conducted an examination of our affairs, and, as a result of such examination, has suggested a thorough study, from the standpoint of the public, by the Interstate Commerce Commission, of the whole problem of the relation of government to the transmission of intelligence by telegraph and telephone. The company's policy, as already announced, will be to cooperate fully with and assist the commission in every possible way.

The Interstate Commerce Commission has already issued a general accounting order, effective January 1, 1913, providing a uniform system of accounts for telephone companies. The order follows generally along lines which the accounting officers of this company have endorsed.

It is impossible, and would be improper to attempt, to forecast the action of the Interstate Commerce Commission, but judging by the past record of that body we can but expect that it will be constructive rather than destructive.

As to the future of the company, it was never brighter.

Business indications are normal, our relations with the public and with the public authorities on a mutually satisfactory basis.

The organization on the lines set forth in previous reports is about complete, and the division of the work is so clearly drawn and so closely correlated between the local administration of the associated companies and the central general administration of the American Telephone & Telegraph Co. that there is no duplication of effort or conflict in administration.

Since the last report, the death of Mr. Francis Blake, a long-time director of the company, has occurred. Mr. Blake was the inventor of the Blake transmitter, which was in its time the best transmitting and most effective telephone in existence and was produced most opportunely for the company. The Edison carbon transmitter, which was superior to the magneto transmitter then in use by the Bell companies, had been invented and acquired by interests antagonistic to this company. Mr. Blake's invention not only came opportunely, but was so superior to all other transmitters then in existence, that it soon became a very large factor in the upbuilding of the Bell system as it is today.

Another View of the Telephone in Mexican Battle.

A new phase of the telephone situation in Mexico City during the recent revolutionary battles there has been relayed to TELEPHONY by one of its Texas correspondents. This has to do with the Mexican Telephone & Telegraph Co. The article last week, dealt with the Ericsson system. The Mexican exchanges were not in the direct line of fire, as was the Ericsson plant, and the operations of the company were not, therefore, interrupted as were those of the Ericsson company. The dispatch from TELEPHONY's correspondent, dated at Mexico City, is as follows:

Directing a bombardment in the heart of a city by telephone was a novelty that was successfully performed here during the recent terrific conflict between the rebel and federal military forces. The important part which the telephone played in various other ways during that prolonged and memorable contest for supremacy between the two armed forces is just being realized by the people here.

Many acts of heroism were performed by the Mexican girl operators in different exchanges in the city during the bombardment. At the risk of their lives these operators remained at their post of duty day and night for 11 days, sleeping upon matresses which were hastily brought to the different stations and placed upon the floors.

These young women responded to the calls of the switchboard often with shells exploding nearby. When the bombardment opened the Mexican Telephone & Telegraph Co. was flooded with calls from all parts of the city asking for information in regard to the outbreak. In order to attend to this extraordinary rush of business the company called to its aid the entire operating force of girls. They were hastened to the different exchanges in motor cars, sometimes being forced to cross the firing lines and narrowly escaping the bullets that whizzed about them.

The two city exchanges known as Neri and Juarez and the suburban exchanges at Tacubaya, Mexcoac, San Angel, Cocoyan, Tlalpan, Tacuba, Atzcapotzalco and Guadalupe were swamped with business nearly every hour of the day during the 11 days the fighting lasted. The girl operators could not venture into the streets to their homes and many of them labored through to long hours filled with anxiety as to the possible fate of their relatives and friends.

Comparatively few telephone cables and wires were broken by the bullets or the exploding shells. Communication between the National Palace and the different embassies and the arsenal was kept open at all times. It has developed that the late President Madero used the telephone frequently during the long period of bombardment to talk with Felix Diaz, the commander of the opposing military force, and with the ambassadors of the different foreign countries. Military commanders, federal and rebel, directed the movement of troops and the firing of field pieces in the streets by means of the telephone. The telephone was also used by the newspaper correspondents to obtain reports, throughout the day and night, of the situation.

Soon after the bombardment was started President Madero ordered the Mexican Telephone & Telegraph Co. to not permit the wires to be used for any purpose except that of the government. This order, however, was disregarded and the service was at the disposal of the general public at all times.

Another important feature of the telephone service during this trying period was that it facilitated the summoning of surgeons to care for the wounded and to direct the work of the hospitals.

It was by means of the telephone also that the Americans and other foreigners scattered about the city were summoned from their homes to the United States embassy and to other points outside the danger zone. But for the use of the telephone in this way it is probable that there would have been many of these foreigners killed.

A Boston dispatch supplements the foregoing account, showing how the operating force of the Mexican Telephone & Telegraph Co. rendered service during the revolution. This is related by President Smith, of the company, in a letter to a Boston friend.

"Our service was continuous throughout the revolution," Mr. Smith writes. "This was largely due to the bravery of the girls who operate our switchboards. Some of the men were equally brave. I have been told of instances of their connecting broken lines when it seemed foolhardy and almost suicidal. In some cases this was done in cross fire, but not one of them was shot.

"None of our inside plants was in any way damaged. This is equally true of our underground plant. Our aerial plant, in certain sections, was pretty badly shot up. On the evening of the 21st there were 2,000 lines out of service; on the evening of the 22d, 1,600 lines; the 23d, 1,200; the 24th, 700; the 25th, 400 lines."

To Determine Fair Rates for Denver.

Mayor Henry J. Arnold, City Auditor James Markey and City Treasurer Allison Stocker of Denver, Colo., have organized as members of the special commission, authorized under the Brown bill, to undertake an examination into the property and business of the Mountain States Telephone & Telegraph Co., in Denver, with a view to establishing a standard and permanent series of rates to which the company must agree in applying for a franchise.

Following the organization the members of the committee declared they would proceed as rapidly as possible with the examination of the telephone company's plant, so that an absolutely fair set of rates and charges, to which the company can have no excuse for objecting, can be settled upon. A telephone engineer of national reputation will be engaged to make the examination for the city.

Under the amendment the telephone company has until April 14 to submit a report or statement, including its physical valuation, earnings, etc.

Brazos Valley Interests Buy Houston.

J. B. Earl and B. C. Hyde, of the Brazos Valley Telephone & Telegraph Co., of Waco, Texas, are reported to have purchased a majority stock interest in the Home company, of Houston. Mr. Earl has been elected president of the Home company.

Public Utilities and Public Policy

The Vail Standpoint—A Review of His Article

By J. C. Kelsey

I wonder if you are in the habit of reading the Atlantic Monthly? It comes regularly for a whole year for $4, and is intellectually as heavy as the price is high.

Very few business dyspeptics have the time to read anything but predigested matter. That's my fix, and it may be yours.

This magazine undoubtedly reaches that high, intellectual circle, whose smugness, uselessness and stay-at-homeness makes any appeal to them for support or activity almost hopeless.

Several friendly souls have cruelly torn the pages from this magazine in order that I might be enlightened.

The article, "Public Utilities and Public Policies," written by Theodore N. Vail, echoes sentiments most dear to him and his company, the American Telephone & Telegraph Co. He is courageously frank at times, and shows a willingness to take whatever bitter medicine may be coming to his company.

There was but one surprising idea—his belief in natural monopoly! As he expresses it, it gives us the impression that he still hugs to his bosom the delusive hope that his own company will be the monopolist.

I think Mr. Vail really means that as long as there is but one company in a locality, connected with the general network of long distance lines, there is a natural monopoly, regardless of ownership.

It may be true that the public generally does not believe in two telephones, but it has a queer habit of granting competing franchises, even after it has formerly petitioned for one company.

It is pretty hard to say what the public wants, because even the public itself does not know.

Getting back to the article—Mr. Vail sets out to establish some fundamental principles: "There are few utilities which have no alternative or substitute." Naturally, he is leading to the telephone, whose alternatives or substitutes are so palpably absent—a good point, too, if you come to think of it.

"No utility can sell service at a price greater than its value in comfort and convenience, or even in actual money. Prices must be regulated so as give a fair return."

The immediate inference here is that some localities cannot have service at all, because the two factors may not harmonize.

"Net revenue is produced in two ways—large profit on small business and small profit on large business—the latter being preferable."

He has in mind the early days of the Bell company, as well as the later ones. It was vastly more profitable to serve 300,000 subscribers than 5,000,000, yet you can see the great difference in the strength and impregnability of a system of 5,000,000 over that of 300,000.

"No utility can deliver the same service at the same cost." The Pennsylvania railroad will make more money at 2 cents per mile than the 'Frisco, for instance. His point is that uniform rates make combination necessary—a single system or monopoly.

This could not apply to the telephone, since the rates are so widely different. New York charges the equivalent of $240 per year, Chicago once $175, now $125, St. Louis $72, Kansas City $60, and on down to $36 and $24 to suit local conditions.

"Where competition is carried on, it is easy for competitors to maintain prices or to observe agreements when business is above normal."

"When business is subnormal, no agreement will be long observed."

"Competition carried on at unreasonable profit is, without question, the result of agreement."

"Unreasonable profits, sooner or later, bring new competitors into the field. This has given rise to the belief in the great virtue of competition."

"Competition is induced by a desire to share in the increasing demand for commodities at normal profit, to share in an increasing business at excessive profit, or to create by destructive and aggressive tactics a situation to force a purchase."

In other words, develop a nuisance value. You can almost see the Bell president's anxiety to get in this last clause. We all know how much his company fell for "destructive and aggressive tactics." It is a long, long list.

"The vicious acts of aggressive competition are responsible for the present antagonism in the public mind toward big business."

"The public encourages competition because it will give them benefits, but such benefit is temporary, because all losses due to destructive competition must be recouped."

"Big business has one weakness that small business has not—that is notoriety and publicity."

"The settlement of competitive wars always affects the public unfavorably. When prices are restored even to normal, they are in constant contrast, and the consumer resents."

Why they resent, Mr. Vail finds it hard to explain. The public need not suspect that two corporations were engaging in war for fun, nor would they carry on war beyond their best interests anyway.

Mr. Vail does not like competition at all. He admits it causes stimulation, but permanent reduction in charges is only encouraged by time and labor saving devices.

One thing sure, Mr. Reader, we have to give competition credit for a great bunch of improvements. I do not believe they would be here otherwise.

The second section of this article turns to the question of regulation and control. After commenting upon the necessity of confidence in commissions, and of their fitness and fairness, he arrives at the conclusion that control and regulation and competition will not lie in the same cradle.

Personally, I believe the idea is generally acceptable, but the public should have some loophole for relief.

I know of a case where a company is giving execrable service, and its management sits back and laughs at the enraged citizens, knowing that this particular commission is favorable to it and will not permit a competing plant.

Of course, this is a special case. Most every telephone

man knows better than to get at cross-purposes with the public.

It is pretty hard to preach the necessity of confidence in commissions, and at the same time appeal every contrary decision to a higher court! Whatever we may say, public control is a theory, not a condition.

The third part of the article deals with public relations.

"The old and proper idea of franchise put the public on a basis of a partner—in a partnership between public, capital, invention or utility, and the individual."

"The public furnishes consumption—the individual the initiative, energy and ability—and the capital the necessary means toward the completion of the idea."

"The theory was that each should get its fair share of the benefits—the promoter upon whose initiative enterprise and risk something of public benefit was produced, the public in comfort and well being."

Say, I am glad the promoter is getting a kind word—the Bell Press Bureau has been very harsh with this greatly misunderstood and maligned individual!

The next idea is that those who controlled utilities in early days did not seem to realize that the public was the master of the situation. Neither did the public realize its strength until realization was forced upon it by indignant public opinion seeking redress.

Further, that the public has no recollection of early struggles, and no gratitude whatever.

"Unless the public is reasonable in the use of the new-found power, and exercises it equitably, all remaining confidence will be destroyed and prosperity cease."

This sounds a little bit morbid—possibly you would feel so too if you covered 3,000 square miles and heard all the kicks!

We also learn that a little let-up would be highly appreciated. And no one should feel that the trouble is over because business is good today.

Now for the telephone part of it, which has been eight long pages in coming.

"The relation of the telephone system to the public is unique. No other utility has the same personal relation, and as much importance as a public necessity, and the utter dependence of the public."

Here is where I want you Independent telephone men to look and listen.

"This importance is not only in the local exchange service, but in the dependence upon a quick and reliable service to all points within speaking radius."

The hammer is out, pounding on the theory that the telephone is a local issue!

It is true that in numerous instances the long distance service was the only weapon which was of any value to many Bell exchanges.

In my own experience, our exchanges would have been empty had it not been for the long distance service. Even then I doubt if even 3 per cent. of the total calls ever got beyond the rental limits.

Then we have an admission that there have been setbacks, faults and grievous mistakes. Confession is good for the soul. And we further have a promise that the experience and knowledge derived from the past will be heeded.

In my wrath I have accused the Bell company of learning nothing new and forgetting nothing old. Here is a plain refutation of my statement!

Mr. Vail has given reasons for some of the faults, especially one that the telephone was born when corporations were thought to be masters of the people.

Also, that at this time patents were held in respect by the general public, and that inventors were entitled to acknowledgment and profit.

Now, it may be that patents were once held in respect. It is a cinch that nobody cares anything about them now.

It would be a different story if the telephone was an invention of today.

Then the slow growth of the telephone put its original promoters to sleep, as it were. When the advantage of the telephone did become recognized, it came all at once. Men jumped into the business with nothing but enthusiasm. Capital was conspicuous by its absence. Even yet that seems familiar.

It was impossible to give service over the grounded lines, with their inductive disturbances, and it was no wonder that the public was dissatisfied!

Now listen again, and look! Here is where you come in, you Independent—you so-called "bogus telephone people," "opposition," or anything.

"Just at a time when the local (Bell) companies found themselves in a position where reconstruction and rehabilitation were absolutely necessary, the Independent telephone promoter showed his head."

"At this time came an unprecedented period of unparalleled prosperity. The western farmer came into his own; favorable seasons and large demands made good markets for his produce."

"Consumption had finally overtaken production and passed it in the race. Industrial workers found full time employment at full wages. Instead of mortgages being foreclosed, they were torn up. What a field for the promoter!"

It seems that the Bell companies were caught with the goods—that is, junk! They had all capital issued and had no reserves. They found themselves opposed by new and up-to-date switchboards and telephones, and cut rates.

"What wonder," says Mr. Vail, "if, in some localities, the Bell service and the Bell companies became a by-word and an offense!"

I never knew it before—that the Bell interests were frightened. Yet we learn that "it would have been a bad day for Bell interests but for the courage and optimism of the then head of the system, who came in about the time when everything was at its worst."

"So he procured and poured millions and millions into the local companies, and put them on their feet."

"The result was that the Bell system was *once more* in a position to give as good service as could be given, but to give a universal service such as could not be given by the Independents."

I was relieved when I read this word "Independents." I was prepared and even braced myself to find the contemptuous word "opposition" applied.

Of course, it did come in the next line—"but the opposition plants were beginning to learn that maintenance, reconstruction and obsolescence were not negligible quantities."

Now, let's be frank. I don't believe the Bell companies themselves realized this. Extraordinary depreciation is but a few months old.

Here is where we disagree, although Mr. Vail later admits that the public has not yet digested or assimilated the fact that "exchanges operated and controlled independ-

ently could give good local service, but could not satisfy the public as against a system which made each exchange the center of a system over which conversation could be had in every direction to the utmost talking condition."

If this be true—and we know it is not, for it has never been demonstrated—why is it that the receipts of long distance are so low and disappointing?

If long distance service was half as valuable as the criers for universal service insist, the income of every station would be much greater than $9 per year for the whole country, $6 in such places as Ohio, Indiana and Illinois, and $3 in St. Louis!

Something is wrong somewhere. Surely the public has not yet demonstrated its fondness for long distance telephone service!

Two more points and we quit. You have my suggestion even to pause or rest a while, or do something else for a time—I myself am tired!

"The public, however, has begun to appreciate and believe that the telephone service should be a natural monopoly; that any telephone exchange must give universal service; that one telephone is sufficient," etc.

Well, well! Murder will out! I knew he would come to it. But you know what he means. He is still talking for New England consumption!

The last point reveals the great problem.

"The question of the profitableness of each separate unit of the system cannot be considered; the system must be considered as a whole."

That is what the world is kicking about. They want the question of the "profitableness of each separate unit" considered. And those in the Independent telephone business, up against cut-throat competition supported by districts without competition, want every consideration of each unit taken. That is the very excuse of public control.

There will be no rest until each and every unit under stressful competition is compelled to charge the same as where no competition exists.

Then will begin the day when red ink will leave telephone ledgers and we will live happily ever afterward!

MORAL: Our needs always influence our opinions.

Practical Telephony for the Practical Exchange Manager

A Series of Articles Relating to the Construction, Maintenance and Operation of a Moderate Size Telephone Exchange, Which Began in the Issue of September 21, Expressed in Everyday Terms, Easily Understood—Principles Easily Applied

By H. R. Van Deventer

As the location of the telephone instrument often plays an important part in the maintenance costs, recurring troubles can often be eliminated by moving the instrument. It is useless to keep on replacing cords on a common battery desk set so located that when the set is placed on the window sill, the cord lies against hot steam pipes; also to continue splicing wires broken by moving the desk while the bell box is connected to it.

If two desks are close together, the person at one of them will invariably stretch the cord of the desk stand too much when using the set. The remedy is to sell the parties an extension set or to relocate the main set so that it will be handy for both persons. Never install a desk set in a butcher shop where the man who cuts the meat can handle it. Use a wall telephone.

A good way to eliminate the trouble due to broken connecting wires on desks is to run an iron conduit part way up from the floor, as shown in Fig. 36. Run the line wires through this conduit, also the battery conductors if the system is magneto. Locate the bell box on the back center panel of the desk and take the cord out through the back of the desk and up over the rear edge, as indicated.

Another good scheme where there are a number of desks which have to be moved from time to time, is to place a metal bell box right on the floor and connect to it with a plug on the desk stand cord.

Urge and insist on the use of suitable bracket arms or holders. These save cords and improve the service by making the telephone easier to use. Any live installer can sell the average subscriber a desk bracket if he will half try. Some companies permit the installer to make what he can from the sale of approved brackets, while others rent them.

Where there are two or more telephones in the same room, the bells often get out of adjustment by people bending the gong, stuffing paper under them, putting rubber bands about them, or in other ways trying to alter the tone so as to distinguish between the ringing of two or more sets. This is properly accomplished by using gongs of a widely different tone, or by using a pair of

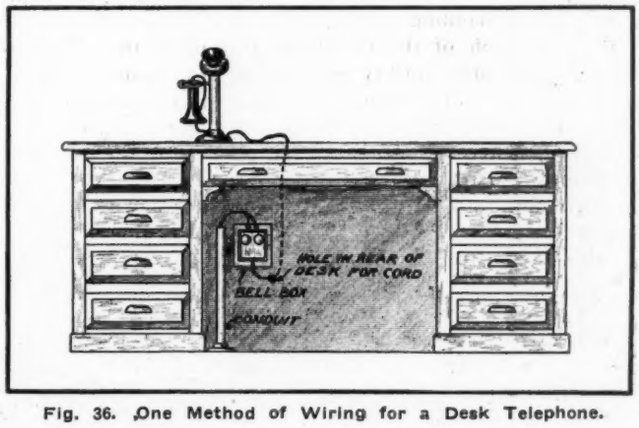


Fig. 36. One Method of Wiring for a Desk Telephone.

wooden gongs, which are solid wooden balls the same shape as the gongs and mounting on same posts. The easiest method is to cut with a hacksaw one or more slots in each gong from the edge almost into the center hole. This gives the gongs an entirely different sound from anything in the ordinary gong line, and is much better than the chunks of gum, paper, solder, etc., often used for the purpose.

Supply a small hook upon which to hang the directory. Let the subscriber understand that it is dangerous to hang the book on the receiver hook, mouthpiece, gong nut or crank.

There are very few modern desk sets in which the trans-

mitter cord is exposed. Such cords invariably are damaged by waiting subscribers playing with them, and often by the transmitter itself becoming loose and being moved back and forth on its knuckle joint. It is advisable on desk stands having adjustable transmitters and used on pay stations, or by a large number of people, to tighten the transmitter joint so that it cannot be moved. This eliminates the trouble that often occurs from that source.

AUTHOR'S NOTE—In a former installment regarding cables, the following data should be inserted:

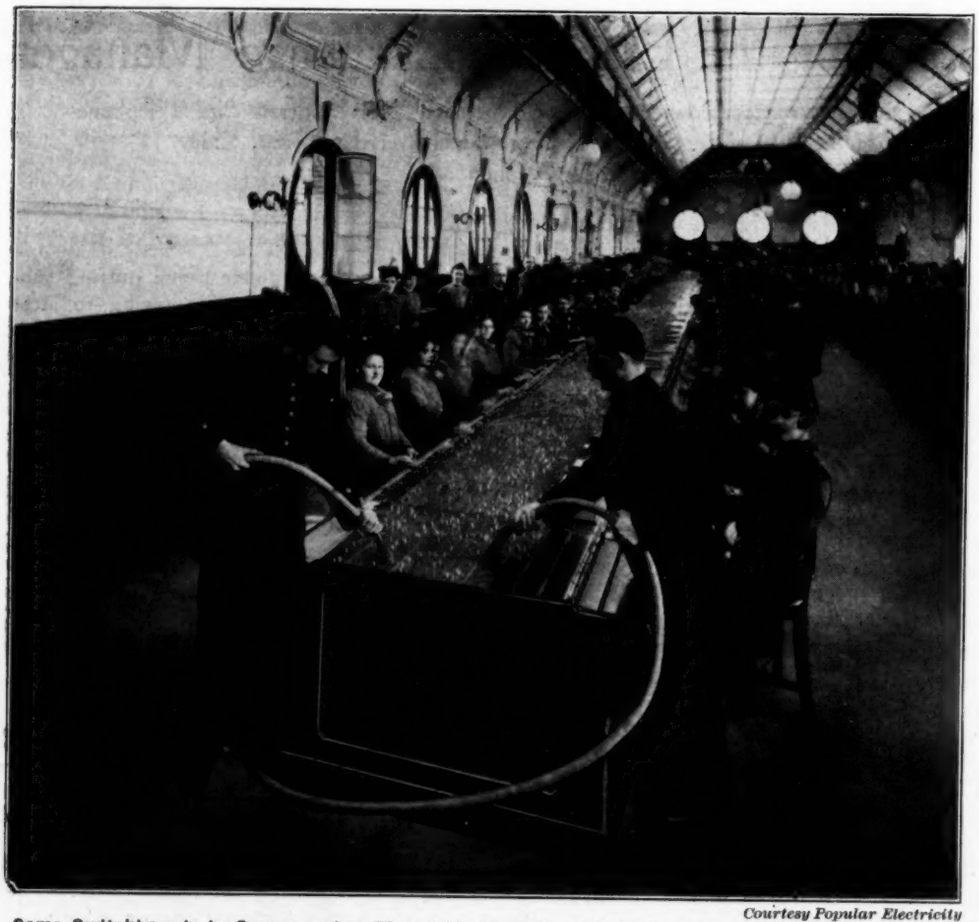
Resistance, per 100 feet, of lead covered cable.

Gage, B. & S.	Conductor Resistance per 100 ft. of Cable in Ohms, Temperature, 68 Deg. Fahr.
10	0.106
13	0.213
14	0.270
16	0.436
19	0.871
22	1.742

(To be continued.)

Cleaning Telephone Switchboards in Berlin.

In striking contrast to the vertical panels of the telephone switchboards of the modern American exchange is the horizontal arrangement here shown, says a writer in Popular Electricity. This is a picture of a large exchange in Berlin, Germany. The operators sit at both sides of the switchboard and in front of each at the edge of the board are the plugs and keys used in operating. While the horizontal board affords a ready surface for the accumulation of dust it is evident that this is not allowed to gather, the two uniformed employes being shown at work with vacuum cleaners fitted with proper suction nozzles for keeping the board dustless.



Courtesy Popular Electricity

Some Switchboards in Germany Are Placed Horizontally and Are Dusted with Vacuum Cleaners.

Moline Orders Old Poles Down.

All poles, wires and other street obstructions, property of the Union Electric Telephone Co., in Moline, Ill., must be removed before May 1 or legal steps will be taken to force action. A resolution to this end has been adopted by the city commission. The resolution was addressed to the Illinois Independent Telephone Co.

The Partnership of the Public.

Recognition of the public as a partner with capital and labor in the successful operation of utilities was emphasized by William McClellan, electrical engineer for the New York Public Service Commission, Second District, in a recent address before the New York Railroad Club. An abstract of the address appeared in the Electrical World as follows:

This new recognition of an always existing relation has been very tardy by all business, said Mr. McClellan. It is seen at present more clearly by public service men because of the very nature of their business. In the end, it will be found to be fundamental to all. Indeed, it is a truism to say that labor, capital and the public are the three partners that must join in the conduct of any business. Each has resources that the others need in their business.

Business will fail when any one of the three partners fails of proper reward. Business will be unsatisfactory when any one of the three partners neglects to bear its proper share of the burden of direction and support. The public service company that does not keep this constantly in mind fails as certainly as does the banker or the baker who is neglectful. To recognize it freely and to act accordingly is to be modern in a necessary and practical way.

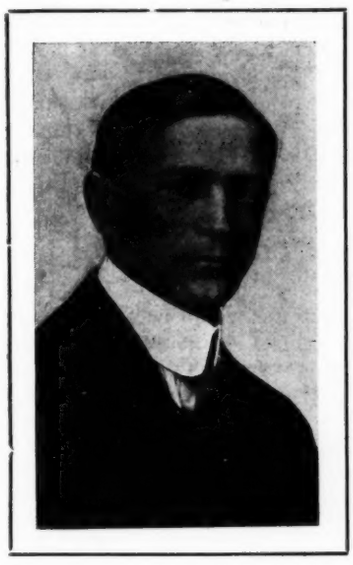
The partners must learn to live and to work together—each respecting the rights of the others. Learning means a process of education—self-education usually and often with much difficulty. Occasionally the dull ones must be gently prodded, the unruly must be given a bit of the rod, and the vicious will assuredly be expelled from the business entirely. And what must be learned?

Capital, which has heretofore regarded itself as the principal or even sole partner, must recognize the equality of the three. It must deny itself dividends that are not earned. It must learn that its chief asset is a property with full service value. It must learn that good service and good wages are as sacred as good dividends.

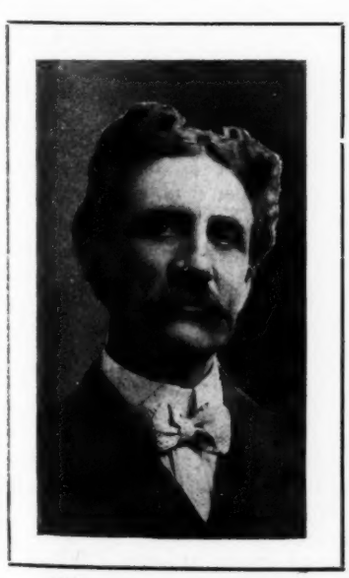
The public must learn that expenses and proper returns to its partners can come only out of earnings and that rates must be fixed accordingly. It must learn to be willing to pay for what it demands. It must learn that men and material have physical limitations and that allowance therefor must be made.

A Quartet of Men Prominent in the Telephone Field

THEOPHILUS WHITE, now a member of the real estate firm of Webb & White, Baltimore, Md., has been actively identified with some of the larger Independent companies of the country, among them those at Baltimore, Pittsburgh and Wilmington, Del. In 1899 he, in conjunction with his present partner, H. W. Webb, secured 5,000 contracts for the Washington, D. C., company, which failed to secure a franchise from Congress. They then associated themselves with the Maryland company, in Baltimore, and later Mr. White went to the Pittsburgh & Allegheny company, making big records in contracts for both companies. He was made a director and traffic manager at Pittsburgh, severing his connection there to return to Baltimore. He was with the Maryland company until its transfer to the Consolidated Gas & Electric, when he went to Wilmington to reorganize the telephone department of the light and power company there. He formed the partnership with Mr. Webb, in February, 1908. Mr. White was born in Perquimans county, N. C., September 27, 1877.

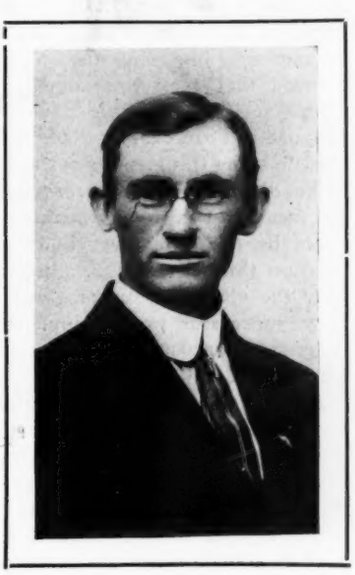


WILLIAM A. CHANDLER, president of the Seneca Telephone Co., Seneca, Mo., is also vice-president of the McGannon Mercantile Co., a general merchandise corporation, in Seneca. He was born in Kirksville, Mo., August 31, 1860, and obtained his education in the country schools. In November, 1881, he removed to Seneca and clerked in a store there. Ten years later he, with three others, organized the McGannon Mercantile Co., which now does a business of $90,000 a year. The business is now owned by Mr. Chandler and J. H. Tobien, the latter being also secretary of the Seneca Telephone Co. The telephone business was established in 1899, with 30 subscribers. It now has about 220 in Seneca, besides owning toll lines connecting with all adjoining towns. Farmers' lines covering the county center in the Seneca company's exchange. Seneca has a population of some 1,200. Mr. Chandler is president of the school board, having held the post for the past six years. He is also a stockholder in the Bank of Seneca. He is a Mason and a member of the Truro Club.



FRANK FULLER FOWLE, consulting engineer, New York City, was a graduate of the Massachusetts Institute of Technology, electrical engineering course, in 1899. Until 1903 he was with the engineering department of the A. T. & T. Co., in New York; for the next three years he was with the railway department of the same company. From 1906 to 1908 he was manager of the long distance business in the Chicago territory. From 1908 to 1912 he practiced the profession of consulting engineer, in Chicago, during which time he was appraisal and rate expert for Beloit, Wis., examined St. Paul water mains to determine electrolysis damage, appraised telephone properties, and made many expert investigations for public service corporations. He became one of the editors of the Electrical World in 1912, in May of that year becoming one of joint editors in charge. On February 1, 1913, he again took up the practice of his profession of consulting engineer, with offices in New York City. Mr. Fowle has contributed largely to technical periodicals. He is a member of a number of scientific societies.

CHARLES E. GUERNSEY, manager and assistant secretary of the Eden Mutual Telephone Co., Schaller, Iowa, was born in Henryville, Ind., February 28, 1882. His education was obtained in the grade and high schools of Henryville, supplemented later by a correspondence course in telephone engineering. He has been interested in telephony since boyhood, has never engaged in any other line, and has gone through every branch of the work. He began by building a small system in Henryville, in 1898. Then he associated himself with the Bell system for a time. In September, 1903, he went with the Scott County Telephone Co., resigning the management of that organization to accept a similar position with the Eden Mutual Telephone Co., at Schaller, March 10, 1910. Since Mr. Guernsey took charge the company has doubled in size and is making an exceptionally good record financially. He has aided other companies in the territory adjoining his own, helping them to establish their plants and systematizing their operations whenever possible. He is an I. O. O. F. and a K. P.



How the Chicago Independent Advertised Its Service

Commercial Superintendent of Illinois Telephone & Telegraph Co. Describes, at National Convention, Methods Used to Arouse Interest in Automatic Service—Newspapers, Booklets, Mailing Cards, Music Hall Performers, All Play Part

By C. W. Winkler

As a new man in the telephone business, I am not going to try to instruct the old telephone men in what to do regarding commercial problems. I will try to outline in the best way that I can the method which we have pursued and are pursuing to interest the people of Chicago in our telephone and to get them thinking the right way.

When the Illinois Tunnel Co. was reorganized we found that it was rather inactive. The traffic was not what it should be and we immediately tried to devise ways and means whereby the traffic would be increased. The method of securing contracts is one thing and the method of getting the subscriber to use the telephone after contracting is another. Some of our plans, perhaps, have been rather spectacular.

Number Calling Contest.

One method we used in getting people to use our telephones was a number calling contest. We sent out letters to our subscribers telling them that on a certain day we would give them theatre tickets providing they called a certain number which was designated the ticket number. In those letters we showed 25 automatic numbers.

People would call and ask if it was ticket number and those answering would say, "No, this is Marshall Field's," or, "This is "Hillman's." In that way the public became acquainted with the fact that the larger firms throughout the city had automatic service. When they got the ticket number they gave their name and address and two seats at one of the theatres were sent to them. We gave away 25 pairs of seats every week for a considerable period. The traffic in this way increased about a hundred thousand calls per day.

It is a question whether or not you would call that legitimate traffic. Some say no, and some say yes, perhaps. But that was one method we used to get the people interested in our telephone system, including presidents and managers of big concerns, as well as office boys, and results showed that they were equally interested.

On election night we gave out the election returns. I suppose almost every telephone company represented here did the same thing. We got our returns from the Examiner office direct from the press wires and we gave them out by means of a loud speaking transmitter. The figures could be heard by everybody calling and the number we used on this was No. 12. Subscribers calling No. 12 would hear the election returns given out and I believe it was a very successful proposition. On that night our meters registered 200,000 calls, or a little better, so that people certainly called some.

Another method we have tried by which to interest the people in our telephone was supplying them with lists of the people whom they called most frequently. We found that Chicago people had a great many Bell numbers in their heads and no automatic numbers. So we immediately supplied them with desk easels in which we inserted a card showing the 25 or 30 numbers which they called most frequently. We found that that increased our traffic considerably. We also furnished them with small loose leaf books in which they inserted the numbers they called most frequently. This book was used, of course, for the larger concerns which would have from 75 to 100 numbers which they called regularly. The easel and the book also carried the imprint of our trade mark, which is an automatic dial, with the letters "IT" in its center.

We also sent out last year 5,000 calendars which could be set on the desk. This year we received quite a number of requests for additional pads. We had a little notice on the stand that if they would write us we would furnish them with the next year's pads. That seemed to be a very good scheme.

Mailing Cards for Big Users.

After we did all this we though it would be a very good proposition to have the subscribers do something, so we asked them to send out cards announcing that they had automatic private branch exchanges, or main lines, installed. We went around to our subscribers and asked them to give us copy for the cards.

For instance, we have one from Hillman's which states:

"Announcement is made of increased telephone facilities by the installation of automatic telephones. Quick and easy communication can be had with this store by calling automatic private branch exchange 107."

At the bottom it says: "Use the Automatic when calling us. Hillman's Department Store." Here is another example:

"We have recently installed an Automatic Private Branch Exchange connecting all departments. When communicating with us by telephone kindly call Automatic Private Branch Exchange 33-207. Farley Candy Company."

This was printed in two colors.

We print these cards and give them to the subscribers, who insert them in all the letters that go out. That, I think, is one of the best things we have done. It has caused a great deal of comment and it shows what the other fellow is doing. We are following that up whereever we install a private exchange or important main line. We follow it up immediately and the cards are sent out by the subscriber.

Another thing we try to do, which we have found to be successful, to interest the subscriber in our proposition, is to ask him to invite all his customers to install automatic service because it is the best service, quickest service and the secret service. In this way we work an endless chain. The subscriber puts in the service, he tells his customers, the customer tells someone else, and we work a little endless chain which is, I believe, very beneficial.

We believe in advertising for a good many reasons. It puts our proposition before the public and I believe a public utility should be before the public all the time. It creates comment, even though people read our advertisement and say something bad about us it is still a good advertisement.

We have other means whereby we advertise our service and that is by taking pictures of Mayor Harrison when he is talking to Grand Rapids, or Peoria, or Bloomington. We place these in store windows and have them published in the various newspapers. We also have pictures taken of various prominent actors and actresses sitting at a desk using the automatic telephone, with the dial plate promi-

nently displayed. We put these in the store windows wherever there is a nice furniture display, or a display of any kind, one, for instance, by the Derby Desk Co., where we put an automatic telephone on the bank president's desk so that everybody going by knows that the president who is going to occupy this desk uses an automatic telephone.

CLEVER DEVICES AT THE THEATRES.

We have installed right now, at the American Music Hall, ten enunciators which are concealed; you cannot see them. Jack Norworth sings into the telephone and through these enunciators a very effective song, "Detective Moon." There is a key on the stage connected with each of the enunciators. The operator presses key No. 1 and the voice comes out of enunciator No. 1; he presses key No. 8 and the voice comes out of enunciator No. 8. The stage is darkened and when Norworth stands on the stage in the spotlight and sings this "Detective Moon" song, it is very effective. He works up to this with a little stage business and when Miss Bayes asks him what to do next he says, "I'll tell you what to do next; we'll call them up on the automatic telephone."

At the Military Girl show, we had 16 telephones which the girls used to call the people in the boxes, and this seemed very attractive.

Now, I will come down to more serious thought, and that is co-operation in the various departments. The commercial and the engineering departments of a telephone company must work in close harmony; there must be no dissension. When problems come up which the commercial man is not able to solve it is up to the engineering department to get busy in the matter so that the commercial man will be able to tell the subscriber something, whether or not a thing can be done. An engineer ought to be like a good lawyer; he ought to be able to tell you what can be done and how to do it rather than what cannot be done or how not to do it. I am very fortunate, however, in having associated with me an engineer who shows me how.

The traffic department and commercial department ought to work very closely together. We are not selling telephones; we are selling service. If the service is not good, no matter how well organized your commercial department is, you will not be able to get very far. Since the establishment of our traffic department the service has been greatly improved; in fact, business is as good as we could well expect, and I believe that our success in the commercial end has been due, to a large extent, to the good service which we are now giving our subscribers.

PERSONAL CALLS ON BIG SUBSCRIBERS.

The commercial superintendent or contract agent, should make it a point to call on all of the prominent subscribers. Whenever a P. B. X. is going to be installed he ought to go and get acquainted. It creates a good feeling for the company. It is a sort of co-operative thing. If the subscriber knows the commercial man is interested and wants to give good service he feels more inclined to use the telephone and it gives good results all around.

When it comes to the matter of handling solicitors, that is a real problem. In order to have a good solicitor you have to be very careful to select the right kind of man.

This is a real gamble. You cannot tell by a man's looks what he can do. I try to be careful in selecting men and I give them every chance in the world to make good. I treat them as I would like to be treated myself. If they have any troubles I want them to come and talk to me about them. If I cannot solve their troubles we have men in our organization who will tell me what to tell them.

The commercial superintendent or contract agent and the solicitors work very close together. The men must have the absolute confidence of the commercial man, and vice versa. Otherwise, there never will be organized a fighting machine which will be able to go out and round up the right kind of business. I am glad to say that the men I have now are real fighters. They go out in the morning with their shoulders thrown back and their chests out and their heads erect, knowing absolutely that they have the right kind of a proposition to sell and they believe in it.

We believe that the Independents have the greatest proposition in the country. All we have to do is to stick together, believe in our proposition absolutely, and I know that we cannot fail.

Louisville Reorganization Plan Accepted.

Official announcement has been made of the adoption of the reorganization plan proposed for the Central Home Telephone Co., of Louisville, Ky., by which present stockholders will receive $2,000,000 of stock in a new company in exchange for present securities.

A circular has been issued by the trustees under the bondholders' and creditors' agreement which declares the new plan to be in full force, more than 67 per cent. of the security holders having acquiesced in it.

The announcement, signed by E. H. Cady, of Toledo, secretary for the trustees, is as follows:

"Notice is hereby given that the holders of more than 67 per cent. in amount of the outstanding depository's certificates, issued for bonds of the Central Home Telephone Co., under the terms and provisions of an agreement dated May 20, 1908, as heretofore extended by supplemental consents and agreements, have approved and consented in writing to the modified plan and agreement for reorganization, dated May 20, 1908, as extended, and hereby declare said modified plan and agreement for reorganization effective and in full force. The trustees, syndicate managers and depository will proceed as rapidly as possible with the consumption of the organization and with the issuing of the securities therein provided for.

Depositors of bonds will be duly notified as soon as the trustees' certificates of stock of the new corporation are ready for distribution.

Notice will be hereafter sent to those depositors who have subscribed for collateral trust notes as to the date payment will be required therefor."

Telephony Property Assessed in North Dakota.

A statistical report has been issued by D. K. Brightbill, auditor of North Dakota, showing the 1912 assessments on telephone property in that state. This gives the total assessed valuation at $1,085,567, of which $481,580 is exchange property, $363,381 is long distance lines and $240,606 is rural lines. The properties are listed as follows:

EXCHANGES.

Number of exchanges	250
Number of subscribers' stations	28,604
Number of poles in exchange systems	31,581
Miles of wire	9,242
Feet of aerial cable	32,813
Feet of underground cable	17,933

LONG DISTANCE.

Miles of pole line	5,046
Miles of iron wire	8,500
Miles of copper wire	12,231

RURAL.

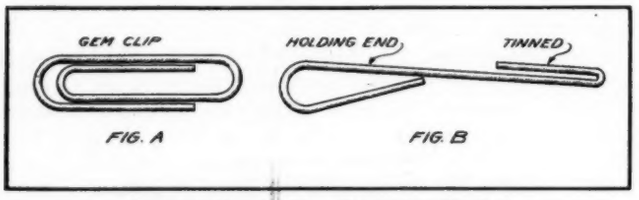
Miles of pole line	14,177
Miles of iron wire	21,144
Number of subscribers' stations	14,889

The total subscribers' stations in the state, therefore, is 43,493; the total miles of pole line (outside of exchange systems), is 19,223; the total miles of wire is 51,117; and the total feet of cable, aerial and underground, is 50,748.

Practical Subjects—Letters and Discussions

Kink for Removing Broken Composition Plugs from Jacks.

Switchboard inspectors or troublemen who have difficulty in removing broken plugs from the mutiple and answering jacks, because of the fact that the fire rules do not allow a flame to be carried around the operating room,



Construction of Plug Removing Device.

will be glad to know a simple and convenient way of removing plugs for marking or designation purposes.

Plugs are placed in spare and discontinued jacks, and the heads are very often broken, which means that the broken plugs must be replaced with new ones.

There are two ways of removing the plugs that I know of, one is to carefully break the remaining piece of plug in the jack to smaller pieces with a small sharp tool and remove each piece. The other and most satisfactory method is to bend a Gem paper clip, as shown in the drawing, and tin heavily with resin-core solder wire. Hold the clip over a stationary gas furnace flame until red hot; then carry it with a pair of pliers to the plug to be removed and place it against the plug, holding with slight pressure until cold. It will be found that the solder will hold the heat long enough to walk to the end of the largest operating room. After the composition of the plug has been melted and allowed to cool around the tinned Gem clip, the plug will readily come out of the jack.

Camden, N. J. E. L. Lehman.

Telephone Passes—A Toll Business Getter.

A new idea for increasing toll revenue is described in a recent issue of The New England Telephone Topics. It is being exploited by the commercial engineering department of the New England Telephone & Telegraph Co. A canvass among business houses was started the first of December, which resulted in 463 orders for 162,300 passes from leading business houses during that month.

While the pass was put out as a New Year suggestion,

TELEPHONE, BAY VIEW 9999
TELEPHONE PASS
is entitled to call this Company by Long Distance Telephone without charge
EXPIRES DECEMBER 31, 1913
PROGRESSIVE SALES COMPANY
SEE INSTRUCTIONS ON BACK OF CARD
By
Treasurer

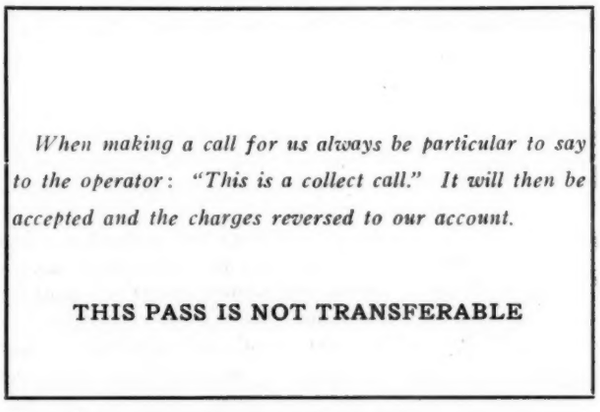
Face of Toll Telephone Pass.

and a special canvassing effort made in order that the subscribers might receive the passes before January 1st, the canvassing will be continued as late as July 1st of this year, and in December will be resumed for the year 1914 passes.

The idea has met with a most flattering reception, as business men seem to think it excellent advertising, and they are willing to open their telephone door to free communication, the same as their store entrances are always open to the public. No more obligation to purchase is imposed on an inquirer by telephone than on a visitor to the store, and in both cases reliance is placed on quality and prices of goods and the personal efforts of the sales force to make sales. It is assumed that the free call privilege will induce people to enter the telephone door and that a good salesman, when thus put in touch with a buyer, will be able to make a sale, at least in a majority of cases.

The company furnishes the larger business concerns with as many passes as they will agree to distribute. On receipt of orders, proper acknowledgment is made by means of a personally addressed form letter, indicating the proper method of distribution in order to obtain efficient results.

While some business firms now advise their customers on letter heads and by other methods that they may call by telephone "collect," this pass idea seems to appeal to them as a more effective method of doing the same thing,


When making a call for us always be particular to say to the operator: "This is a collect call." It will then be accepted and the charges reversed to our account.
THIS PASS IS NOT TRANSFERABLE

Wording on Back of Pass.

and in a larger way. There are, of course, many more who have never accorded their customers this privilege, but who are now compelled to do so because of competition.

The economical shipment of merchandise made possible by the "parcel post" will undoubtedly prove a great stimulus to sales by telephone, and the "telephone pass" idea is receiving favorable consideration in this connection.

It will be obvious that the introduction of the pass idea does not in any way affect either operating or accounting methods, the instructions on the pass requiring the call to be given to the operator as a collect call in the usual way.

It is confidently expected that the privilege extended to the holders of these passes will be appreciated and freely used. It is evident that even a small average use during the year, will mean a large increase in revenue and at a very small cost of production.

The Switchboard Girl Writes Her Aunt.

Go With Him Twain.

My Dear Aunt:

At last you have stopped to take breath and to give me a chance! Pardon the seeming impertinence, but, in behalf of our circle, I want you to listen to me.

This was my Sunday off the switchboard, and I was glad that I could go to church this fair day. Strictly fair it is, and a walk in the forenoon was a vital pleasure. With so

few such mornings at my disposal, you can scarcely realize the beauty of sight and sound it brought to me. It was restful to listen to the voices of the swaying trees; the music of the water as it creeps up, then glides away again in little waves on the glimmering sands of the lake shore along my path; to drink in this world of color; to breathe this purest air.

As I enter the church, with its quiet atmosphere, a sense of rest replaces all thought of the trials of yesterday and the unknown ones of tomorrow.

The minister briefly tells the narrative of that old oriental custom—the neighborly escort of a passing stranger. You know it, so you can guess his text: "Go with him twain."

I was all attention, for this day of church-going is a treat to me, and my bridge was crossed long before he came to the end of his discourse. Auntie, I might just as well have been at home reading a long letter from you, on "Loyalty to your employer!"

I have a habit of arguing the propositions of a speaker, while I listen attentively. Right here I'll speak of one of his. Watching the clock is no proof of disloyalty to one's employer. That is the outward, or surface, view. We watch the time because we are tired, bodily and mentally, when quitting time comes. We are just as anxious to get back to our work the next time, feeling that all kinds of disaster may have come to our switchboard during our short absence.

Underneath this, and stronger than our employer may realize, is the resolve to never patronize the merchant who for one cause or another will not have our telephone in his store.

I may watch the hands of the clock and, at the same time, be glad to see new numbers on our directory, and sorry to see a group of returned instruments as I go through the hall to my work; and be more than glad when my toll calls have, during my hours, grown a hundredfold more than my salary for the time.

At such times I feel certain that my employers observe and appreciate my efforts, and when the holiday season comes and I find a fine box of my favorite chocolates on the desk, I know my efforts have not been in vain, even if I have watched the clock hands.

That is reciprocity. You notice I have read politics, too, in my course of self-improvement. The time given to this study alone shows my devotion to my work, for through that I may give the music of simple, serious language to our patrons.

Also, in exercising the utmost serenity at my post, thereby conserving my energies and serving both employer and patron well at the same time, I show my appreciation of the fact that any trust carries with it grave duties. In being true to these, I am gaining self-approval, and know that I become, unaware, constantly larger than the place I occupy.

From this I imagine other forms of reciprocity. If, from any view-point I may be reported in disfavor, my employer, through this reciprocity of good will, would come directly to me and talk things over, rather than use a secret service system in unexpected quarters and then wait a month to mention a fault.

One desires earnestly to feel the superiority of persons to whom he owes allegiance. Perfect fidelity, which means perfect service, is bought by the employer. The same rules of honor apply to him as to the employe who sells to him; the same mutual regard for one another's interest and welfare.

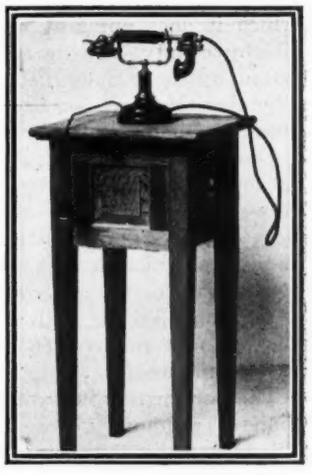
I owe much to a good employer for what business training I get, so I must never make it necessary for him to explain to me that he is the head of the office. This then is my motto: "To thine own self be true. It follows as the night the day, thou canst not then be false to any man."

That could be made reciprocal, too, couldn't it? I should like to tell you some time what I think of the subscribers' crabbedness. And I think I will soon.

Your niece, JUNE.

A Portable Residence Telephone Set.

The portable telephone set shown in the photograph was made up recently for a physician who had just built a model house and wished to have his telephone service as convenient as possible. The telephone wiring was done at the same time as the electric light wiring and flush plate outlets were placed in each room upstairs from which it was thought the telephone set might be used. The installation itself consists of a regular bridging wall set downstairs and the portable set upstairs, comprising a small table with a desk set.



Useful Residence Set.

The table, built of solid oak, was furnished by the subscriber. The telephone apparatus, including generator, ringer, batteries and connecting block, was mounted in the cabinet under the table top where it can be inspected from the door in front. The desk stand is bolted fast to the top and connections to it are made in the base through a hole in the table top. Directly under it connection to the line is made by a piece of lamp cord with an attachment plug at the end. By screwing this plug into the flush outlets already mentioned, the set is connected to line and ready for use.

The subscriber has expressed himself as very much pleased with the installation, saying it was worth the extra cost, which was about $11.

Clay Center, Kan. M. C. Wilson.

Gets Away from the Dead Man.

Seeing a letter to Ben on page 41 and 42 from Uncle Dick, in last week's paper, I wish to testify to the fact that, in my experience, I have found a number of instances such as the sketches which he includes with his letter, in my work. The one with the log two feet in the ground, with the rod driven through to hide the fault, is what we call a "hook worm anchor" because undoubtedly the rascal who puts down such an anchorage must be afflicted with the hook worm. This causes the afflicted one to be possessed of nothing more than laziness and a very low moral standard.

I recently tried some patented anchors in the hope that I might get away from this fault and finally found some which are proof against the hook worm lineman. These are the anchors that screw down or are driven down into the solid ground, requiring no digging, filling or tamping. There is no chance for linemen to do a trick such as that shown by Uncle Dick.

A. C. P.

The Telephone on Board Ship.

The three great liners of about 50,000 tons each, which have been ordered by the Hamburg-America line, says an English exchange, are going to be fitted out with telephone exchanges of the most modern type, to which each cabin will be connected.

Proceedings Before Commissions, Courts and Councils

Discussions and Rulings of State Bodies Having Supervision of Telephone Companies, Decisions of Courts in Matters Affecting Public Relations of Utilities, and Actions of City Councils Bearing Upon Franchises, Rates and Service

Grants Certificate of Convenience and Necessity.

The Public Service Commission, of Ohio, has granted a certificate of "public convenience and necessity" to the Farmers' Telephone Co., of Shelby county, giving it the right to operate in Anna, that part of the city of Sidney which it does not now occupy and the rural districts of Shelby county. The granting of this certificate was opposed by the Sidney Telephone Co., which declared that adequate telephone service was now being given in all the locations mentioned.

During the course of a public hearing, when arguments of counsel for both parties to the controversy were heard, it was shown that the Farmers' Telephone Co. is incorporated under the Ohio laws, that its headquarters were in Sidney, and that it had, prior to the filing of its application to the commission, and prior to July, 1911, established a telephone system with a large number of telephones in the business and residence districts of Sidney and in the rural communities of Shelby county.

The commission did not find that the contentions of the Sidney Telephone Co. were well founded, and accordingly ruled that the Farmers' Telephone Co. might extend its lines into the territory mentioned above.

Ohio Commission Rulings.

The Public Service Commission, of Ohio, has granted permission to the Wellington Telephone Co. to issue 6 per cent. notes in the sum of $7,000, the proceeds to be devoted to the acquisition of property and the extension and improvement of the company's plant. The company proposes to expend $5,000 to purchase the plant of the Central Union Telephone Co., the balance of the money to be laid out in new construction.

Permission has been given the Peoples Telephone Co., of Geneva, to issue $15,000 additional capital stock, the proceeds to be expended as follows: $5,000 to purchase the plant of the Co-operative Telephone Co.; $3,500 for rebuilding and repairing this property; and the balance, except $2,228, for the extension of the company's cable plant and the replacement of various portions of its equipment. The sum of $2,228 is to be retained in the treasury to meet such other demands for construction as may from time to time become necessary.

In a ruling issued at the same time the Peoples Telephone Co. and the Central Union Telephone Co. are authorized to continue an existing connection of their systems after the interchange of business.

Said to Have Violated Wisconsin Law.

The Wisconsin public utilities law prohibits the duplicating of public utilities in any village or city or section of the state except by permssion of the Railroad Commission. It expressly prohibits a new telephone company from establishing an exchange in a village or city where there is already an exchange.

The Bergen Telephone Co., a new concern, established an exchange in the city of Clinton without securing the necessary permission from the commission, and the attorney general was asked for an opinion as to whether the Bergen company was violating the law. Attorney General Owen holds that the law is being violated, and that the Bergen company is subject to the penalty prescribed.

Protest Rates Under Merger.

At a recent public meeting at Lexington, Ky., held under the auspices of the Housewives' League, resolutions were adopted severely criticising the merger of the Cumberland and Home telephone companies and the resultant higher rates and branding the absorbing telephone company as a branch of the telephone trust of the country; asking the attorney general of the state to co-operate with the citizens of Lexington, and the county in the suit filed seeking the dissolution of the merger; calling upon all telephone subscribers to join in the suit now pending and others to be filed in the United States court and appointing a committee to act with the committee appointed at the mass meeting of the county subscribers.

Added to this is the action of County Judge J. Percy Scott, who, with the approval of the fiscal court, has instructed County Attorney D. Gray Falconer to investigate the legal rights by which the Fayette Home Telephone Co. is using the right of way of the turnpikes of the county in which to set poles and string wires.

Judge Scott says that the county has never granted a franchise to the telephone company to use the county's roads for such purpose, but that the company secured only a permit from the county authorities to put up its poles along the roads several years ago, and that therefore the county has a perfect right to order the company to remove its lines.

Will Not Accept Rates Fixed by City.

J. L. Zietlow, of Aberdeen, president of the Dakota Central Telephone Co., has notified the city auditor of Mitchell, S. D., that a copy of the ordinance recently passed by the city council had been received by him, duly considered and that the company will not accept the rates set by it for service in Mitchell. The new rates proposed by the council are $2.50 for business telephones, $1.50 for an individual residence telephone, $1.25 for a two-party residence line and $1.20 for a four-party residence line. These rates are about 50 cents lower, each, than the rates which the company wants to establish.

Florida Court Holds Against Commission.

The supreme court, of Florida, has just sustained the Southern Telephone & Construction Co., of Tallahassee, which refused to obey a ruling of the Railroad Commission. The company discontinued service to a subscriber who refused to pay a $1 removal charge. The subscriber petitioned the commission for an order for reinstatement, which was issued. The telephone company declined to obey the order, upon which the commission appealed to the court. The latter held that the commission had no authority to issue such an order without first establishing general rules.

Bell Companies Deny Trust in Mississippi.

Replying to charges of combination and conspiracy recently filed by Ross Collins, attorney general of Mississippi, the American Telephone & Telegraph Co., the Cumberland Telephone & Telegraph Co. and the Western Union Telegraph Co. have filed answers in the chancery court of Lauderdale county. These deny specifically all the attorney general's allegations, imputations and charges.

The Telephone Inspector and the Troubleman

Continuation of a Series of Articles Begun in the September 7 Issue of Telephony—They Deal in an Elementary and Explicit Manner With Many of the Problems Encountered by Telephone Men in the Operation of Small Exchanges

By A. E. Dobbs

"'The next step is to determine the wire centre. The location of the central office should be at a point from which a minimum amount of wire will serve the total number of subscribers. This point is known as the telephone wire centre.

"'A simple method of finding the theoretical wire centre is given in Fig. 3. The total number of estimated ultimate subscribers is divided in half by the line *Y-Y*, and a similar operation is performed by a line *X-X*; the quadrants thus formed will each contain an equal number of subscribers. The point at which the lines *Y-Y* and *X-X* intersect represents a theoretical wire centre.

"'The location of the office at this point will certainly require the least wire plant investment, and involve the smallest annual charge for depreciation and maintenance, because the amount of both plant and investment therein is at a minimum. The wire plant increases as the office recedes from the theoretical wire centre, but this is offset by an important decrease in the price of land if the direction is away from the business section of the town.

"'A location other than at the theoretical centre must be determined by a careful comparison between the investment in wire plant and that in real estate.

"'For obvious reasons, in the larger exchanges underground cables are gradually taking the place of aerial cables and of open wires on all main routes.

"'The general principle involved in making fundamental conduit plans in large cities is that each block, where there is dense distribution of subscribers, should be touched at some point by the underground, and that a given run of conduit should touch as many blocks as possible. This result is evidently best obtained by running the ducts along the narrow end of the blocks. As alleys generally have their entrance at that end we have the double advantage of an easy and convenient aerial distribution from the underground terminal pole. The conduit should also

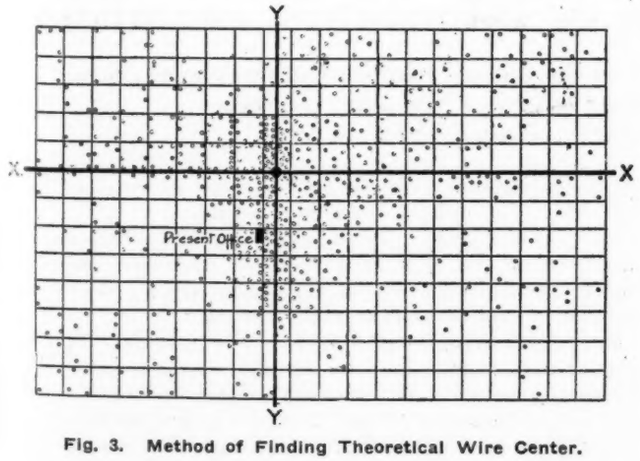


Fig. 3. Method of Finding Theoretical Wire Center.

be placed on alternate streets, otherwise a block would be touched at both ends, which would be useless expenditure. Should the existing conduit be found insufficient to carry the load, it is better to parallel than to open the existing route, if the cost of repaving is not thereby greatly increased, because for the same expenditure greater flexibility and facilities in distribution are obtained. These methods are of course subject to modifications due to local conditions. In small towns and on the outskirts of cities, the location of ducts is determined also by the number of subscribers to be served.

"'The skeleton feed is designed on the map which shows

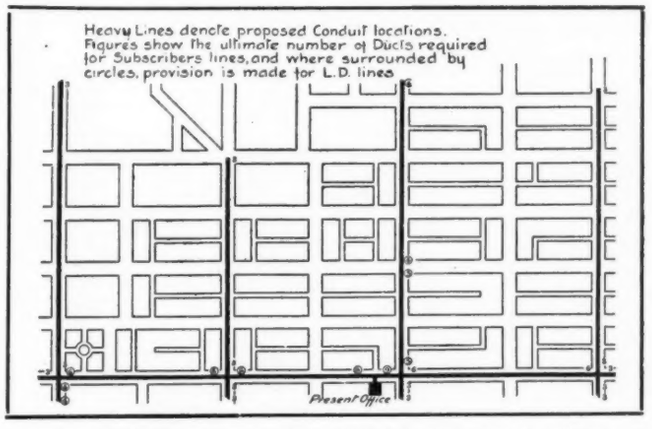

Heavy Lines denote proposed Conduit locations.
Figures show the ultimate number of Ducts required
for Subscribers lines, and where surrounded by
circles, provision is made for L.D. lines
Present Office

Fig. 4. Fundamental Telephone Conduit Plan for Small Town.

the ultimate figures, and by looping the subscribers' lines to the proper route and adding up the number on each, it is possible to determine the ultimate number of ducts necessary. The number of ducts is based on the ultimate use of 400 pair No. 22 gage cables for subscribers' lines, except for long loops. It is assumed that the efficiency of cables will increase with the number of cables and that the margin for errors in estimating the number of subscribers should decrease as the number increases. Provision is made for long distance lines and in multi-office studies for trunk and toll trunk lines, also due allowance is made for ineffective plant. As previously mentioned, the fundamental conduit plan is designed for the ultimate period. It will probably show conduits in districts which are sparsely populated, and which will not become congested. Although the conduit may never be laid, it will indicate the proper direction of the main leads. Fig. 4 is the section of a small town showing a fundamental conduit plan.

"'The object of a cable plan is to indicate for a given exchange area, the locations and sizes of such cables and terminals as are required in the immediate future to permit telephone service to be given throughout the area in the most economical manner over a stated number of years. To enable this to be done, a comprehensive system of distributing cables with frequent terminals is required, whereby all portions of the exchange area can be economically reached by distributing wire beyond the cable terminals.

"'Further, the cable plan can advantageously show the best and most economical routes upon which to group the distributing cables into the main leads. As the greater portion of the expense of a cable plant is in the main cable portion of the system, only a reasonable margin of facilities above the actual requirements should be provided. By suitably tapering the main cable and arranging

the multipling so that they can conveniently be cut in for relief, the amount of dead wire in main cables can be kept at a minimum.

"'Estimated requirements are for five years. This figure is obtained from the curve in the same way as for the ultimate.

"'The next step is to show how each of the subscribers' lines will be routed from the central office. It is necessary to take account of the time that must elapse before the distributing plant will be completed, and the question of utilizing existing construction must be considered. In general the cable leads should follow the routes indicated by the fundamental conduit plan so that future transfers from aerial to underground construction can readily be made.

"'Where a cable passes through a block, it is usually economical to provide one or more terminals for distribution within the block. In placing terminals the necessary conditions to observe are that the terminal be adequate

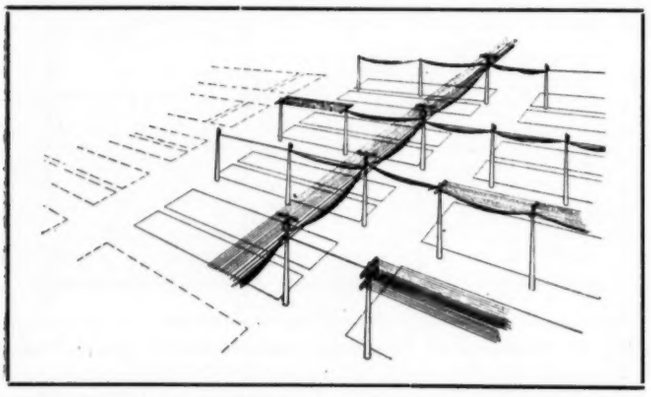


Fig. 5. City Construction Prior to Use of Development Study.

for the number of stations which it will ultimately be required to feed and that the installation of each terminal is justified by the amount of distributing wire which would be saved by it at the average time.

"'In aerial cable distribution from terminals, it is important that a careful arrangement of the pairs at the several terminals should be made, in order that the distribution may be rendered as flexible as possible and to prevent pairs remaining dead, because unavailable at terminals where they might be used.

"'The system of multipling in use has been arranged

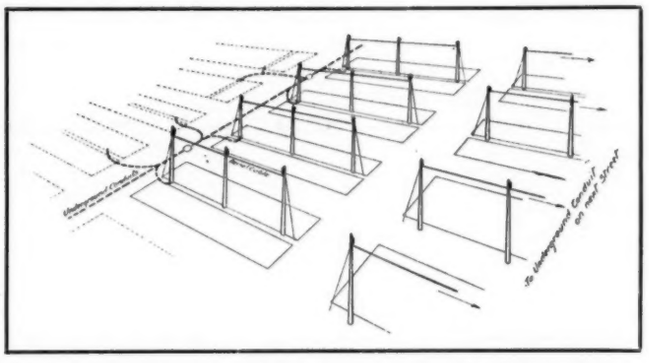


Fig. 6. Underground and Aerial Construction Based Upon Fundamental Studies.

with special reference to providing for party line distribution. In arranging the multipling, the establishment of future points of relief must be considered. Beginning at the outer end of the cable, all the pairs should be brought out as rapidly as possible, consistent with a reasonable over-lapping in the distributing cables. This process should be repeated in the balance of the cable as the multipling is worked back toward the central office, taking care to establish the points of relief. The multipling of the pairs brought out in the cable terminal completes the design of the cable plant.

"'The desirability of having a plan under which to construct the plant seems unquestionable, and the usefulness of these completed studies has been demonstrated in Canada during the past few years. As an example of this, Fig. 5 shows a section of a city prior to the use of development studies, while Fig. 6 shows same district laid out in accordance with the fundamental conduit and cable plans.'"

(*To be continued.*)

Uniform Accounting System of Interstate Commission

Complete Details of Plan Promulgated by Government Body for Use of Every Telephone Company Having Annual Income of Upwards of $50,000—Plan for Smaller Concerns is Now Under Contemplation—System Effective Universally January 1, 1913

IV. General and Miscellaneous Expenses.

660. GENERAL OFFICE SALARIES.—This account should include the matters provided for in the following subaccounts:

661. *Salaries of General Officers.*—This account should include the salaries of the chairman of the board, president, vice-president, secretary, treasurer, comptroller, general auditor, general manager, general superintendent, and all other officers whose jurisdiction extends to the operations of the company as a whole.

662. *Salaries of General Office Clerks.*—This account should include the salaries and wages of bookkeepers, paymasters, cashiers, stenographers, and all other clerks employed in the general office, except those engaged in revenue accounting and collecting.

663. GENERAL OFFICE SUPPLIES AND EXPENSES.—This account should include the matters provided for in the following subaccounts:

664. *Expenses of General Offices and Clerks.*—This account should include the traveling and incidental expenses of general offices and other general office employes.

665. *General Office Stationery and Printing.*—This account should include the cost of all postage, stationery, stationery supplies, and printing for use in general offices, except that used in revenue accounting and collecting.

666. *Other General Office Supplies and Expenses.*—This account should include the cost of office supplies (other than postage, stationery, and printing), repairs of office furniture and replacements of such furniture as has not been capitalized; cost of telegrams and of any special telephone service; wages of janitors, porters, and messengers; and other miscellaneous expenses of general offices.

NOTE.—Rents of general offices (less such estimated cost, if any, as is included to cover the expense of furnishing, heating, and lighting them by the lessor) should be charged to account No. 331, "Rent Deductions for Telephone Offices."

667. GENERAL LAW EXPENSES.—This account should include

all law expenses (except those incurred in the defense and settlement of damage claims), including pay and expenses of all counsel, solicitors, and atorneys, their clerks and attendants, janitor service, light, heat, and other expenses of their offices; cost of law books, printing briefs, legal forms, testimony, reports, etc.; fees and retainers for services of attorneys not regular employes; court costs and payments of special, notarial, and witness fees not provided for elsewhere; expenses connected with taking depositions; and all law and court expenses not provided for elsewhere.

NOTE.—The compensation of the general solicitor or counsel or other attorneys engaged partly in the defense or settlement of damage suits and partly in other legal work should be properly apportioned between this account and account No. 670, "Law Expenses Connected with Damages."

668. INSURANCE.—This account should include premiums paid to insurance companies for fire, fidelity, boiler, casualty, burglar, and all other insurance. Charge also to this account and credit account No. 169, "Insurance and Casualty Reserves," amounts set aside as an insurance reserve.

This account should be credited and the proper subdivisions of fixed capital accounts concurrently charged with the of insurance applicable to construction work.

NOTE.—In annual reports to the commission the company will be required to report the charges made to this account for the various kinds of insurance, and for self-insurance.

669. ACCIDENTS AND DAMAGES.—This account should include all expenses (other than law expenses) incurred on account of persons killed or injured and on account of property of others damaged when such expenses have not been provided for by insurance or by a reserve. It includes the pay and expenses of claim agents, investigators, and adjusters; wages paid employes if absent on account of injury; fees and expenses of surgeons and doctors; nursing, hospital attendance, medical and surgical supplies, fees and expenses of coroners and undertakers, and contributions to hospitals; also amounts paid in settlement of personal injury or damage claims.

The account should be credited and the proper subdivision of fixed capital accounts concurrently charged with the expenses of accidents and damages incident to construction work.

670. LAW EXPENSES CONNECTED WITH DAMAGES.—This account should include all law expenses connected with the defense or settlement of damage claims, including a proper proportion of the salaries and expenses of the general solicitor of counsel, and salaries, fees, and expenses of attorneys engaged in this work; fees of court stenographers and other court expenses, the cost of law books, printing briefs, court records, and similar papers in connection with such cases.

This account should be credited and the proper subdivisions of fixed capital accounts concurrently charged with law expenses incident to damage claims arising out of construction work.

671. MISCELLANEOUS GENERAL EXPENSES.—This account should include the matters provided for in the following subaccounts:

672. *Relief Department and Pensions.*—This account should include pensions or other benefits paid to employes or representatives of former employes and expenses in connection therewith; salaries and expenses incurred in conducting a relief department, and contributions made to such department.

673. *Telephone Franchise Requirements.*—This account should include the cost of all service and materials and supplies furnished to municipal corporations in compliance with franchise requirements and for which no payment is received by the company; also of all direct expense, such as paving and other like matters, incurred in compliance with such requirements and for which no reimbursement is received by the company. This does not include such expense incurred in connection with construction or repairs, which should be charged to fixed capital or maintenance accounts. Amounts charged to this account for which there is no direct money outlay should be credited to account No. 676, "Telephone Franchise Requirements—Cr."

674. *Amortization of Franchises and Patents.*—This account should include each month the amount necessary to cover such portions of the life of limited franchises and patents as has expired or been consumed during the month. The amount so charged should be concurrently credited to account No. 103, "Reserve for Amortization of Intangible Capital—Cr."

NOTE.—The amount charged to this account should be based upon a rule determined by the accounting company, the purpose and effect of such rule being to accumulate by charges equitably distributed throughout the life of any franchise or patent, a reserve that will, at the expiration of its life, equal the original cost.

675. *Other General Expenses.*—This account should include such incidental general expenses as are not provided for in the foregoing accounts, such as cost of publishing notices of stockholders' meetings, of election of directors, annual reports in newspapers, and of dividends declared, and fees and expenses paid to directors, expenses of transfer agents, and listing of stocks on exchange.

676. *Telephone Franchise Requirements*—Cr.—This account should include the amounts included in account No. 673, "Telephone Franchise Requirements," for which there is no actual money outlay.

Clearing Accounts.

[Required of Class A and Class B Companies.]

The following accounts are provided for certain expenses which usually affect several classes of operations but need to be brought together in one account in order that the total of the expenses may be known and properly distributed.

701. SHOP EXPENSE.—The account or appropriate subaccounts should be arranged so as to record separately the expenses of the general shops as follows: (1) Salaries and wages of shop employes; (2) personal and incidental expenses of such employes; (3) materials and supplies for general shop use; (4) repairs of shop tools and machinery; (5) rent paid for shop buildings; (6) depreciation of shop tools, machinery, and appliances.

The shop expense account should be cleared by apportioning the total amount of the expenses to the various jobs on an equitable basis.

702. STABLE AND GARAGE EXPENSE.—This account or appropriate subaccounts should be arranged so as to record separately the expenses of stables and garages as follows: (1) Salaries and wages of drivers, chauffeurs, stablemen, garagemen, and other employes in stables and garages; (2) personal and incidental expenses of such employes; (3) materials and supplies, including fuel and gasoline, harness, tires, and other supplies for stables and garages; (4) repairs of automobiles and other vehicles and harness; (5) rent paid for buildings, horses and vehicles; (6) depreciation on vehicles, horses, harness, etc., including losses unprovided for by reserves or insurance.

Credit to this account any charges for service performed for others.

A record should be kept of the use of teams and automobiles, and the total expense should be apportioned to the proper accounts according to use, or the debits to the expense accounts may be made at rates per hour of service which have been found to be fair and to distribute the total expense equitably.

703. TOOL EXPENSE.—Charge to this account all expense

for tools (except shop tools and tools carried as supplies unissued). It includes (1) the cost of small hand tools of which no account is kept after issue; (2) the cost of repairing tools; (3) the cost of tools lost or stolen; (4) depreciation on tools taken out of service because of breakage or other deterioration.

This account should be cleared by adding to the expense of repairs and cost of plant installed such amounts as will equitably distribute the total expense for tools.

704. SUPPLY EXPENSE.—Charge to this account or to appropriate subaccounts all expenses (except insurance and taxes) incurred directly in connection with the purchase, storage, handling, and distribution of materials and supplies and stationery. It includes (1) the pay and expenses of purchasing agents, managers of stores, clerks, and laborers; (2) rents paid for stores; (3) cost of lighting and heating; (4) undistributed transportation charges; (5) discounts recovered through prompt payment of bills for materials and supplies when such discounts can not be assigned to the particular bills; (6) overages or shortages in the materials and supplies account disclosed by inventories which can not be assigned to specific accounts; and (7) the estimated depreciation on materials and supplies due to breakage, leakage, shortage, and wear and tear.

This account should be cleared by adding to the cost of materials and supplies passing through stores a suitable loading charge which will equitably distribute the total cost of conducting the stores and by adding to the cost of such supplies as are bought by the purchasing department a pro rata share of the total expense for the purchasing department.

705. ENGINEERING EXPENSE.—Charge to this account or to appropriate subaccounts all expenses for engineering so as to show separately the following: (1) Salaries and wages; (2) personal and incidental expenses of engineering department employes; (3) rent paid for office and (4) office expenses.

This account should be cleared by apportioning the total expenses to operating expenses and fixed capital accounts on the basis of service rendered, as determined by the actual time devoted to particular jobs or on an equitable basis fixed by the officers of the company.

706. PLANT SUPERVISION EXPENSE.—Charge to this account the cost of general supervision of the maintenance and construction of the plant where a separate department of the company's organization is charged with such supervision. It includes the pay and expenses of the plant supervising officers, such as the general plant superintendent, district plant superintendendent, plant engineers and their office and field forces, charged with planning for and superintending the work of maintenance and plant construction.

This account or appropriate subaccounts should be so arranged as to show in detail the expenses of the plant supervision department as follows: (1) Salaries and wages; (2) personal and incidental expenses of employes; (3) rent paid for offices; and (4) office expenses.

This account should be cleared by charging directly to the appropriate accounts such expenses as can be allocated to particular pieces of work and by charging out the balance on the basis of labor employed in all construction or maintenance work in progress.

NOTE.—The pay of general foremen and foremen in direct charge of jobs should be included in the cost of the job and not charged to this account.

707. HOUSE SERVICE EXPENSE.—This account should include the expenses pertaining to the operation of offices and buildings, whether owned or rented by the company, when such expenses can not be allocated as they accrue to the operating expense accounts and other accounts. This account includes fuel, heat, light, power, elevator service, janitor service, and like expenses, but does not include rents, insurance, taxes, and maintenance expenses.

This account should be cleared by apportioning the entire expense to the operating expenses and other accounts on basis of the use made of such property.

(CONCLUSION.)

Birmingham Grand Jury Censures Telephone Service.

Among other matters considered by a grand jury in Birmingham, Ala., which recently returned its report, was that of telephone service. The Southern Bell Telephone & Telegraph Co. some time ago bought the property of the local Independent company at Birmingham, the Peoples company, and obtained a monopoly in the city. It was openly charged at the time that the Bell had controlled the Peoples company for some time prior to the actual transfer. The grand jury had the following to offer regarding the situation:

"By reason of this merger the citizens have been relieved of one public service corporation delivering poor service and now have only one such telephone service to contend with. There is a popular idea that the physical properties of the Peoples Telephone Company should have reverted to the city. This is probably correct if the Southern Bell Telephone Company had bought the franchise of the Peoples Telephone Co., but the latter corporation surrendered its franchise by consent of the governor and the attorney general of Alabama, acquiesced in by the cities of Birmingham and Bessemer, and urged by a large majority of the citizens. Therefore, the cities had no title thereafter to such physical properties. Whether surrender of the franchise was legal or not we are not prepared to say; that is a matter for legal or future investigation. We have not investigated the matter thoroughly, realizing that it would be a long drawn out affair and a subject more fitting for a special grand jury's investigation if your honor sees fit to refer it to such.

The ever present suffering, however, from this public service corporation, the Southern Bell Telephone Co., is the wretched service daily rendered at an advanced rate. Whether this service comes from a "don't care" or indifferent spirit on the part of the management we do not know, but we do know that it exists, and the public is compelled to meekly submit to it. Assurances of better service have been made, but evidence of betterment is lacking. If evidence is desired as to this positively poor service it can be furnished in overwhelming abundance."

New York Telephone Society Meets.

Jermain Hall, Albany, N. Y., was filled to capacity recently, when the Hudson Section of the New York Telephone Society had as its guest Frank H. Bethell, of the New York Telephone Co., who gave an address on rates. Mr. Bethell spoke about the large organization needed by a telephone company to cope with the problems that constantly arise. J. A. Jamison, Jr., division general manager of the New York Telephone Company, was chairman. A newly organizeed orchestra, glee club, and mandolin club appeared for the first time in public. Several hundred new members were enrolled. The Hudson Section includes employes of the New York Telephone Co. in eastern New York, from Glens Falls south to Newburgh and west to Amsterdam.

Pacific Bell Elects New Officers.

At the recent annual meeting of stockholders of the Pacific Telephone & Telegraph Co., in San Francisco, Louis Glass and E. J. Zimmer, both vice-presidents and directors, resigned, and were succeeded by J. M. Quay and H. D. Pillsbury. E. C. Bradley, vice-president and general manager, also resigned, but remains a director. His successor was not named. Later Henry T. Scott, who was re-elected president, resigned to be succeeded by G. E. McFarland, now vice-president and general manager of Nebraska Telephone Co. Mr. Scott became chairman of the board, a newly created position.

Queries on Theory and Practice

Changing Sets So As to Have Ringers Uniform.

"We have 100 divided circuit telephones, for party line use, with 2,000-ohm ringers, and 25 others with 1,600-ohm ringers. We wish to make them all of the same resistance so we can interchange. Which would you advise, 2,000 or 1,600-ohm ringers? We have had no trouble with either but want to change for the best."

Make all the ringers, 2,000 ohms each. This will be less expensive, as there are fewer bells to change. The higher wound ringers will work better on the heavily loaded lines.

Winding a Retardation Coil.

"Will you give me the proper dimensions for a retardation coil, the size of core, length and diameter, size and weight of wire and resistance? We have a 20-mile bridging metallic telephone line with eight telephones, having 2,500-ohm ringers connected to it. It is desired to work a telegraph line on one end of this line for a distance of half a mile as conditions will not warrant another line. We do not want to buy regular repeating coils but would prefer to make something on the job, having facilities for winding in extra time otherwise lost.

We wound two coils of No. 28 double cotton covered on 7 inches of core three-eighths inch in diameter, composed of fine iron wires. The coils were wound to 300 ohms. A tap was taken off the center of coil through the relay, key and to ground, bridging the relay and key with a 2 mf condenser."

Your lack of success in the coils which you made is probably due to not having the two windings of the same coil perfectly balanced. If you will take the same cores and rewind them with two parallel windings, you will get a true balance, because you will get exactly the same number of turns in one as in the other.

The loss to transmission on the telephone circuit will be reduced by making the iron wires of the core much longer and bending them back over the completed coil, so as to close the magnetic circuit. The better the magnetic circuit, the higher the impedance of the coil, and the less will be the loss to talking current.

Superimposed Ringing.

"I should like information regarding superimposed ringing as used by the Bell companies."

The following information regarding superimposed ringing is furnished by the Western Electric Co. Superimposed ringing current is an improved pulsating current made from a combination of direct current and alternating current. It was developed with a view to making a smoother wave and of getting the benefit of slip rings in place of commutator segments in producing the current. The method of production is very simple and makes possible the use of the regular alternating current machine. In order to explain in detail the method used attention is directed to the sketch.

In Fig. A are shown the connections which are necessary with a superimposed ringing system. The letter *A* indicates a regular alternating current generator producing a regular alternating wave. *B* and *C* are two batteries, each having a voltage from 40 to 50 volts. In the Western Electric installations both storage and dry batteries have been used for producing the direct current. Either one may be used in accordance with the amount of current required.

Fig. *B* shows the wave produced by a regular alternating current generator, while Fig. *C* shows the current produced with the superimposed arrangement. The dotted line indicates the part of the negative wave which has been eliminated by the battery *B*. Likewise Fig. *D*, shows the negative current, and here again the dotted line shows how the positive current has been eliminated by the battery *C*.

With the superimposed ringing system better margins are obtained for the operation of the biased bells. This is

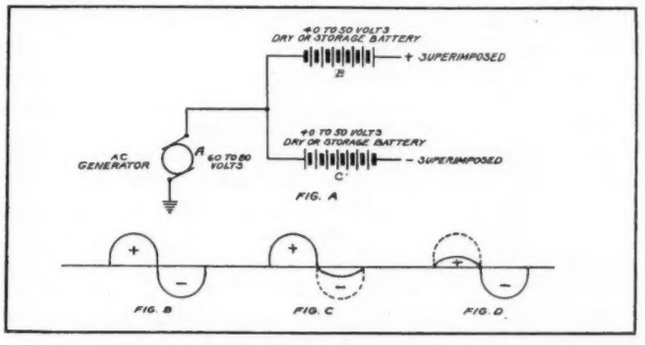


Diagram Illustrating Superimposed Ringing.

a direct result of a simpler and more uniform wave, due to the use of a regular alternating current generator which normally produces practically a perfect sine wave. Another advantage of the superimposed current, is that when a condenser is placed in series with the ringer on the lines, the path for direct current from the batteries is eliminated, and therefore the alternating current is the only current effective on the bell. It is possible for this reason to ring single party lines perfectly with any one of the four-party line buttons.

Connecting a Grounded System to Metallic Toll Line.

"We wish to bring in a lead about 1½ miles in length from about the center of a 25-mile metallic toll line of No. 9 iron wire. Would No. 14 wire do for the lead?

What would be the best way to connect to our board, our entire system being grounded and no provision made in the wiring of board for a repeating coil. The tip side of the wire pairs is grounded at the arresters. Would it be best to connect the toll line through a ring through repeating coil?"

If the lead is not to be a part of any long distance connection, the No. 14 iron will be large enough. But if it is to be used for any calls beyond the ends of the 25-mile toll line, it would be well not to use wire smaller than No. 10 iron.

If there are no metallic lines in your local system, then place a ring-through repeating coil between the arresters and the switchboard. But if you later should have enough metallic lines to pay, you can change the repeating coil to one of your cord circuits.

Making Grounded Phantom Out of a Metallic Circuit.

"I have a metallic line eighteen miles long connected at each end to a magneto switchboard. There are 12 subscribers on this line. The instruments are worked with a lockout switch at each station. The lockout switches are of the step-by-step type and can be used on either a grounded or a metallic circuit. What I want to know is whether I could make a grounded phantom on this circuit for 8 subscribers without interfering with the lockout switches on the metallic lines."

We doubt very much the practicability of converting your lockout line to a grounded phantom, on account of the difficulty of sending the impulses. This is due to the presence of the repeating coil in the physical circuit. If you will send us the detailed circuits of your impulse sending device and of one of the telephones, we will be able to give a more definite answer.

Sparks from the Troubleman's Department

George Fitch on the Telephone.

(Copyright by George Mathew Adams.)

The telephone is the modern invention which would most nearly upset our forefathers if they were to return and look us over. They might marvel at the electric light and climb trees to escape the trolley cars, but if a Pilgrim father were to deposit a conversation in a small box and find it later in the ear of a personal friend 1,000 miles away he would rise up and yell for a witchcraft commission.

The telephone has made neighborhoods out of states and families out of cities. It has put the grocer and butcher within arm's reach of the housewife and has doubled the life of every pair of shoes. It has put the farmer into the city in three rings and a cuss word and keeps the young man within reach of his sweetheart, no matter how faithful the bulldog may be at the front gate. The telephone enables a man to go 100 miles and return while his feet are on his desk, and it enables lovely woman to talk with her friends across the city until her arm gets paralysis, without giving the gossip next door any satisfaction.

But the telephone also has its penalties. It has filled our homes full of strangers and reporters and peddlers, and has enabled the world to bustle in over a thin wire and interrupt our meals and sleep without waiting for admission. The telephone edges in and annoys the lover while he is proposing and yanks the head of the house downstairs at 3 a. m. of a cold night in order to tell him that he is the wrong number and had better hang up.

The telephone is a vast convenience, and without it the world would die of loneliness and sore feet. But like all blessings, it is not appreciated. Thirty years ago it took an hour to go downtown and get the baseball scores. Nowadays if a fan waits half a minute at the telephone before his suspense is relieved they have to burn sulphur all over the house to get the conversation out of it.

The telephone has ruined the profession of chiropody, but it has increased profanity 1,100 per cent, and the citizen who can say "hello" twice without reversing the word and saying it backward is considered too good for this world.

Foolish Question No. 1,259,321.

Bilson, who is a stout man, was running to catch a train the other day, when his friend Jones called out: "Halloa, Bilson! In a hurry? Going somewhere?"

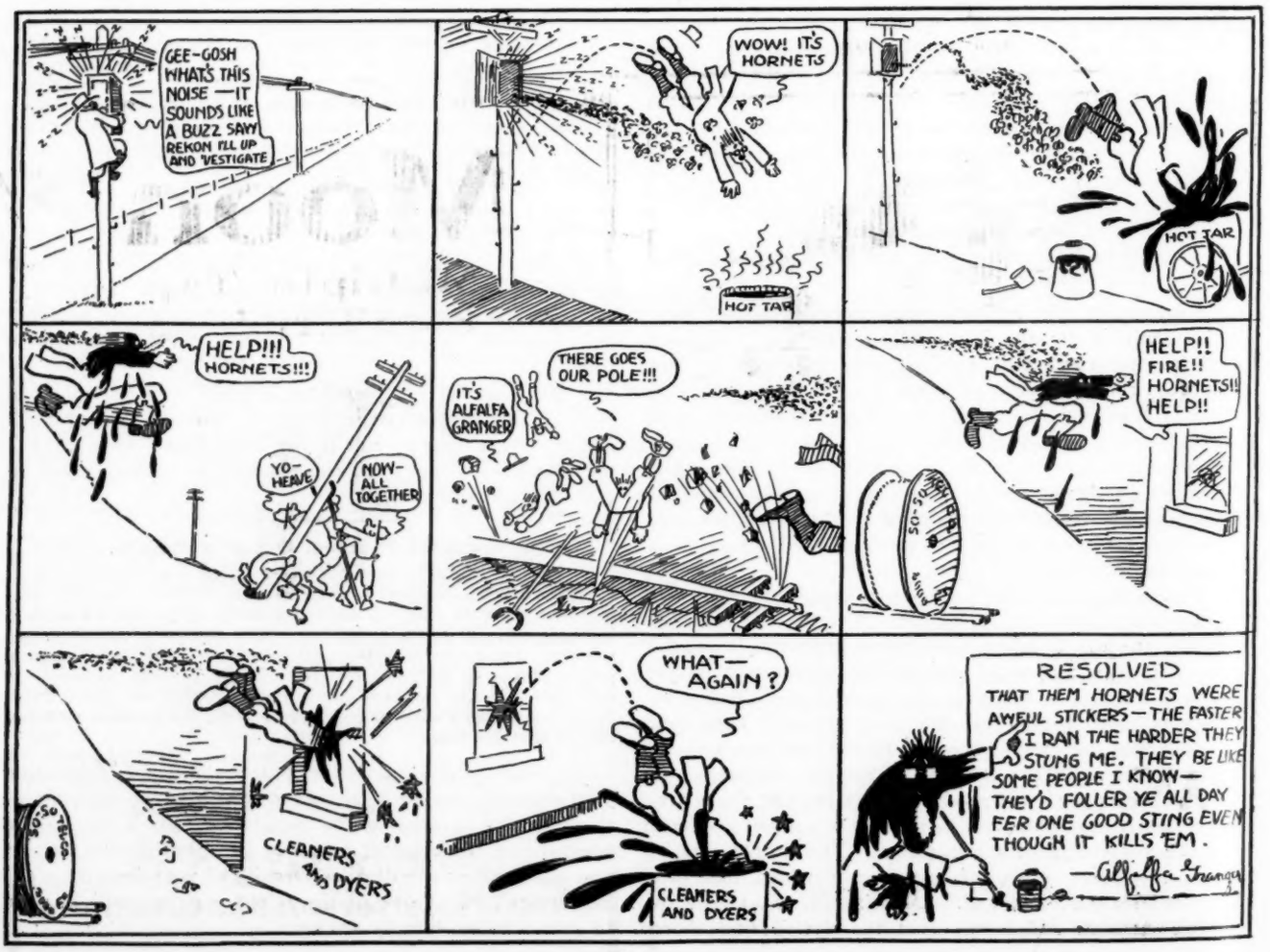
Keeping his breath for other purposes, Bilson made no reply, but he determined to take a terrible revenge. About 1 o'clock next morning he called Jones up on the telephone. After a deal of ringing, a sleepy voice at the other end of the wire told him Jones was there.

"That you, Jones?"

"What do you want?" asked Jones. "I've been in bed these two hours."

"I'm Bilson," went on the other. "Remember seeing me running this morning, eh? Yes? Well, I was going somewhere, and I was in a hurry. Good-night."

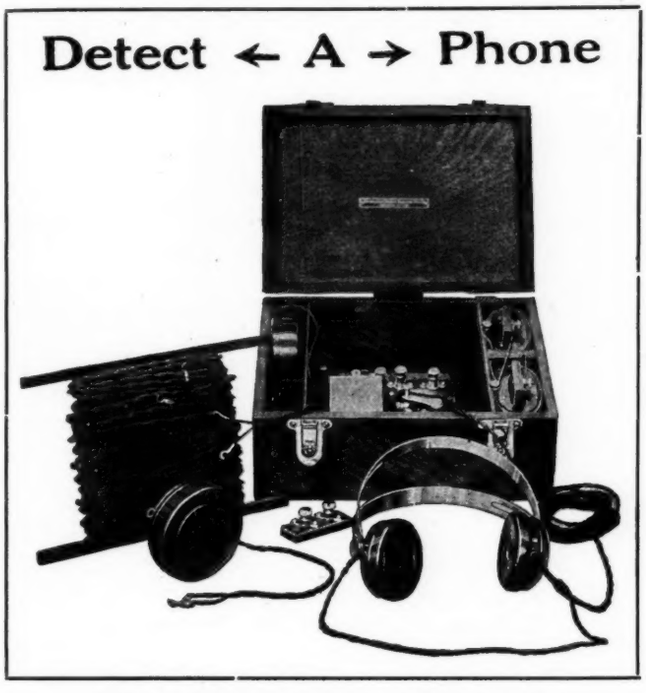
Then Bilson hung up the receiver and got back into bed a happy man.


GEE-GOSH WHAT'S THIS NOISE — IT SOUNDS LIKE A BUZZ SAW REKON I'LL UP AND 'VESTIGATE
WOW! IT'S HORNETS
HOT TAR
HOT TAR
HELP!!! HORNETS!!!
YO-HEAVE
NOW-ALL TOGETHER
IT'S ALFALFA GRANGER
THERE GOES OUR POLE!!!
HELP!! FIRE!! HORNETS!! HELP!!
CLEANERS AND DYERS
WHAT— AGAIN?
CLEANERS AND DYERS
RESOLVED
THAT THEM HORNETS WERE AWFUL STICKERS — THE FASTER I RAN THE HARDER THEY STUNG ME. THEY BE LIKE SOME PEOPLE I KNOW — THEY'D FOLLER YE ALL DAY FER ONE GOOD STING EVEN THOUGH IT KILLS 'EM.
— Alfalfa Granger

From Factory and Salesroom

The Stromberg-Carlson Detect-A-Phone.

The Stromberg-Carlson Telephone Mfg. Co., of Rochester, N. Y., had an unusual experience in perfecting sensitive transmitting and receiving telephone devices while introducing the Deffone and the Hear-a-Phone. Deaf people who can use instruments like the Deffone are exacting many things of the manufacturer in the form of a portable telephone that will make the deaf hear, but even greater uses have been created by the police detectives and others engaged in detective work, which has resulted in some other important developments along these lines.



The New Stromberg-Carlson Detect-A-Phone.

The No. 5 Detect-A-Phone is a development of the Deffone instrument for detective work. The model shown in the illustration was designed after many practical tests by police officials and the company's representatives. Some actual results were obtained with the Detect-A-Phone by detectives assigned to several recent murder cases in the east.

The requirements of the police have been satisfactorily met with the Detect-A-Phone, which is a complete equipment arranged in an accessible but compact carrying case which the average detective is able to intelligently handle and operate quickly without difficulty.

The Detect-A-Phone consists of a pair of dependable but highly sensitive transmitters, with long, flexible cord terminals, which are terminated on a terminal block near the location in which they are concealed when in operation. From this terminal block an extension cord is run to any length up to 200 ft., as may be arranged by using the pair of extension wires shown on the reel. At the other end of the extension wire is located the carrying case, including the batteries, battery switch, staples and other little accessories. To the other side of the terminal switch in the carrying case the operator attaches the terminals leading from the double receiver head set, which is constantly worn while receiving.

Imagine a detective discovering the hiding place of a band of thieves and deciding to use a telephone instrument to collect evidence without their knowledge, by taking down their conversation while in privacy. The transmitters can be concealed in the wall behind the paper or hung apart behind pictures or fixtures in the room. The extension wire is then connected from the transmitter terminals to a place of safety where the detective decides to remain in waiting for his victims.

The terminal wires are terminated in the carrying case by binding posts as indicated in the circuit, and from this same terminal block the head set is connected and everything is in readiness to take down all the conversation that is carried on within a reasonable range of the sensitive transmitters.

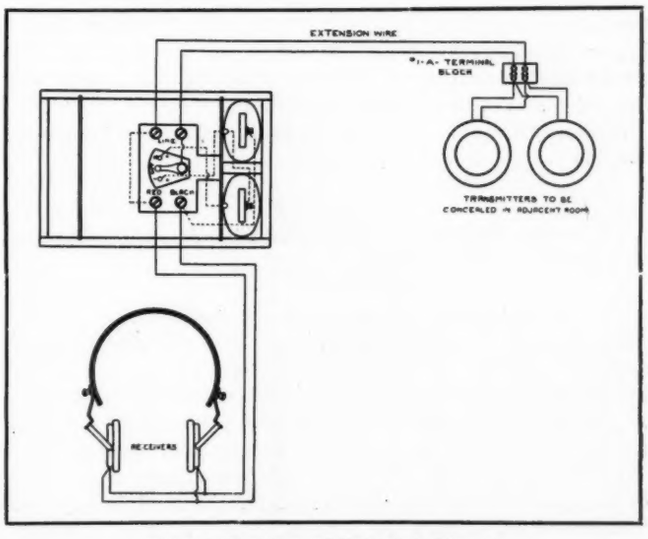
This is one of the simple methods which has been worked with success in a number of police cases. There are numerous other ways in which the Detect-A-Phone can be put to use and many more will no doubt be discovered by the users of this equipment in future.

Telephone exchange managers will no doubt be interested in this novel device. The Detect-A-Phone operates satisfactorily in any place. Excellent results are obtained in a room containing furniture and carpet, as these furnishings tend to prevent reverberations. More information and prices for this equipment will be furnished by the Stromberg-Carlson company upon request.

Federal Climbs Lookout Mountain.

E. Roger Stearns, of the Standard Motor Car Co., of Los Angeles, hung up another Federal record recently, when he drove a Federal up the twisting trail to the top of Lookout Mountain, says J. R. White, of the Federal Motor Truck Co. The guests at the Lookout Inn were treated to a new sensation when they saw Mr. Stearns pull up to the door in a motor truck with as much ease and nonchalance as a pleasure car driver.

Taking a truck with a wheel base of 144 in. around a series of sharp curves, and climbing the entire distance of 20 miles without dropping in low gear was the task which Mr. Stearns successfully accomplished. Owing to the governor on the engine, which limits its speed to 15 miles an hour, the car made just as good time on the slopes as on any city street. Spectators along the route



Wiring Diagram of Detect-A-Phone.

are convinced that the machine in most cases made as good time as a touring car and, had it not been for its length, in all probability it could have broken all speed records.

The car was under perfect control at all stages of the trip. Mr. Stearns did not have to reverse gears once on making curves, but the lengthy car swung around them with the ease and grace of a mountain pony. Several touring parties were held in awe on seeing the big truck so calmly take the narrow and dangerous passes with apparently no fear whatever on the part of the driver.

When asked his reason for such a test, Mr. Stearns explained: "The test was made for two reasons. First, I wished to determine the sustained pulling power of the truck with its 30 h. p. motor, and then I was curious to know just how one of the long wheel bases could be handled in tight places. I know now that the truck will go any place the ordinary touring car will."

Federal trucks are being put into service rapidly in the western mountainous sections. These roads are usually rough and crooked. There are eight bus lines in the Rockies that are using the Federal to haul supplies and passengers, and so far the truck has literally delivered the goods in every case.

Kellogg Company Makes Strong Showing.

The Kellogg Switchboard & Supply Co., Chicago, has made public its balance sheet at the close of December 31, 1912. The figures, which indicate a most gratifying condition, are as follows:

BALANCE SHEET.
As of December 31, 1912.

ASSETS.

Plant, real estate, machinery, tools, etc., less reserves for depreciation to date	$ 500,597.50
(Patents and good will not carried into value)	
Inventories	1,284,643.88
Accounts receivable, notes receivable and investments	944,572.98
Cash on hand	32,740.41
Unearned insurance premiums	4,926.64
	$2,767,481.41

LIABILITIES.

Capital stock issued	$1,000,000.00
Pay roll and taxes accrued	39,485.83
Trade and miscellaneous accounts, not due	71,910.58
Special reserves and reserve for bad and doubtful accounts	175,000.00
Surplus	1,481,085.00
	$2,767,481.41

All investments are in high grade bonds, which can be immediately converted into cash.

Lectures on Automatic Telephones.

The fourth of a series of lectures of the Technical Education Committee at Calgary, Alberta, was recently given by John Dow, whose subject was automatic telephones. A set of lantern slides was specially prepared in Chicago for this lecture which had never before been shown.

In his address, Mr. Dow, who is one of the local staff of the government telephone system, sketched briefly the history of telephones in general, down to the introduction, a few years ago, of the automatic. A complete description of the operation of an automatic telephone was then presented by means of lantern slides, schematic drawings and an actual model of the apparatus at a central exchange. Many of the audience remained after the close to obtain a nearer view of the apparatus.

Speaking of the local automatic exchange, the lecturer said that its expansion had been phenomenal. At the initial installation, no one had dreamed that the work of Calgary's exchange would increase so greatly in so short a time, but the latest installation now provides for a future of 100,000 telephones in the city.

A Life Sentence.

Competition forced a test
To see which anchor held the best
Old-Style, whose anchor wouldn't drive,
Spent all the day from six till five
Removing stone and clay and sand
To set his product in the land.
That done, he forced his weary soul
And filled and levelled up the hole.

Then Up-to-Date came on the plot.
And drove his anchor in the lot.
A twist or two, perhaps a few,
The job was done and more to do.
The poles are quickly set in place,
The cables fastened now in haste.
The judges leave to dodge the storm
That follows soon in every form.

The fury raged—a crash—a bound—
The Old-Style anchor cleared the ground
And murmured in its passing flight
To D. & T. that held so tight,
"Do loosen up, it gives me pain
To think that you resist that strain."
Said D. & T., "I'd love to, though
My blades won't budge, they hold me so."

The critics now are on the ground;
The Old-Style anchor can't be found.
A search is made for Drive & Twist;
No ground disturbed, 'tis nearly missed;
But very soon it comes to view
As Drive & Twist is wont to do.

"The best by test, the D. & T.",
Exclaimed the judge, "that I decree,
And sentence you, both night and day,
To spend your life mid rock and clay;
In every land and every clime
To overcome the sands of time."

Another Stromberg-Carlson Dividend.

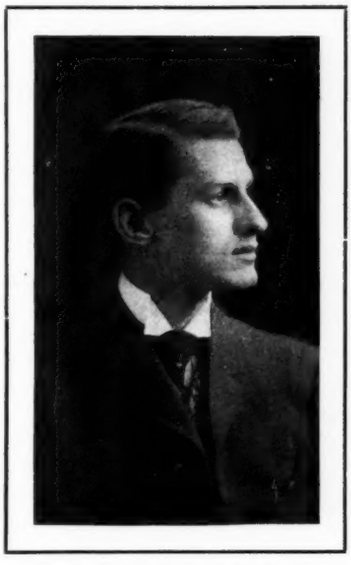
The directors of the Stromberg-Carlson Telephone Mfg. Co. of Rochester, N. Y., have declared a fourth liquidation dividend of 10 per cent. on the preferred stock of the company. This dividend will be paid on or after April 1 to stockholders of record at the close of business, March 22.

The amount of this dividend will be $150,000. With this dividend paid, the preferred stockholders will have received $40 on the par value of each share, and in addition $40.83 of accrued dividends on each share, a total of $1,212,450, most of which has been paid within the past eight months. The balance still to be paid on the preferred stock of the company is $60 per share or a total of $900,000.

Redmond Again on Stromberg-Carlson's Staff.

Murray W. Redmond, as briefly announced last week, is again connected with the selling organization of the Stromberg-Carlson Telephone Mfg. Co. of Rochester, with his headquarters in Chicago. Mr. Redmond has been in the telephone field since 1898, when he went with the Indianapolis Telephone Co. as clerk to the superintendent. In 1900 he became associated with the Stromberg-Carlson

Co., in the installation department. In 1905 he went with the Chicago factory of the Western Electric Co., in the output department. He was in charge of one of the branches of that department at the time of his resignation in 1907, when he again went with the Stromberg-Carlson



Murray W. Redmond.

Co. as a member of its sales organization at Rochester.

When he left the service of the Stromberg-Carlson Co. the second time he was in charge of the Kansas City branch. For a short time he engaged in the vacuum cleaner business in Chicago, but shortly entered the telephone field again as sales manager for the Century Telephone Construction Co., Buffalo, N. Y.

Mr. Redmond was born in Indianapolis, October 8, 1879. He was warmly welcomed back as a member of the Stromberg-Carlson staff this month, both by the members of the big factory's organization and by the trade. TELEPHONY joins in wishing him a very successful career in his old field.

THE PARAGON SELLERS CO. has removed from 162 N. Fifth avenue, Chicago, to the Madison Terminal Bldg., where it will have better facilities and will be conveniently located for making quick shipments. The company would be glad to have any of its customers call at the new offices whenever in Chicago.

Mr. Matthews Makes a Correction.

Reference was made last week in the article by Mr. Matthews, on the guy anchor manufactured by his house, to the "continuous" strain on the anchor when installed. The sentence should have read as follows: "Add to this condition the fact that there is an *intermittent* strain on the line that is eternally trying to hammer the anchor out." Mr. Matthews, in making this correction, calls attention to the fact that there is a material difference between "continuous" and "intermittent."

Limits Courtship of Soldiers on Telephone.

Telephone love-making must not last more than five minutes a seance, according to Colonel Cornelius Gardener, U. S. A., commandant at the Presidio, Cal.

"A soldier must be as quick about his love messages as he is about his fighting," is the motto of Colonel Gardener.

The soldiers of the Presidio garrison found the telephone wire a tender tendril to unite them with the ears of their sweethearts. They utilized that medium. A private would talk for a half hour with his "girl," a corporal for an hour, and a sergeant for an hour and a half at stretch.

This metallic method of courtship rather interfered with army operations. When General Murray would want to ring up Colonel Gardener he would receive the monotonous "line busy—I will call you." If by chance he got the wire he would hear something like this:

"Now sergeant, I think you're real mean for not taking me to the show last Sunday. I don't care if the captain did make you work; you should have told him that you had an appointment with a lady friend."

Colonel Gardener decided to change the system, so he had Captain Bundel post a notice in the headquarters of the First Cavalry and other headquarters which bars the practice.

Economy in Luxury.

"A master entrepreneur" is one of the terms applied to Theodore N. Vail, by an individual who has known him from his early boyhood down to the present time, says the Wall Street Journal. "Besides, all his other admirable qualities," says this man of Vail, "he is also a great economist.

"Some time ago, when the telephone business was largely divided between New York and Boston, Mr. Vail found it necessary to make several trips a week, sometimes, between these two cities. At first he rode with the 'folks' on the regular trains, and was often to be found in the day coach or smoking car. He discovered, however, that there was too much visiting and a trip under these circumstances entailed a waste of time, unless he could get by himself where he could think, work, relax or browse as the mood inclined. And so he got a special car and rode alone, or with one, two or three men with whom he wished to talk.

"He realized that this was a great economic stroke. Instead of making appointments with a man at the office, he simply invited him to ride over to Boston, and together they would thrash out the matter."

Reorganization of the Italian Telephone System.

According to the "Engineer," says an exchange, the Italian Chamber has recently approved a proposal of the postmaster general to spend £2,800,000 on reorganizing and amplifying the telephone services, the urban plant being antiquated and unable to cope with the enormous increase of subscribers. New exchanges will be erected, the underground cables increased in number so as to give to all a metallic circuit instead of a common return, which most subscribers are at present equipped, and the overhead wires gradually abolished for the sake of public safety.

The general telephone exchange in Rome will be constructed in Via Vivinale on land already acquired for the purpose, and will be linked up to secondary exchanges, two of which are already being built at the Prati and near Porta Salaria. These will work on the automatic and semi-automatic principles, and the system will be gradually brought up to 20,000 stations.

In Milan, where this year there will probably be 24,000 stations, the main exchange will be in the new post office, and two of the branch exchanges at Porta Venezia and Porta Ticinese will soon be finished on the same plan as that adopted in the capital.

Genoa will have its central exchange in Via Maragliano, and sub-exchanges in the town and in Sampierdarena, Voltri, Sestri-Ponente, Bolzaneto and Nervi. In Turin all subscribers will have metallic circuits, and the number will be raised to 10,000, while the barracks of S. Salvador, in Venice, will be converted into an exchange station of the most modern type.

Legal Cases and Decisions

By A. H. McMillan

Rates for Hotel Boarders.

"In a hotel in Indiana there is a telephone maintained by an Independent company. Have the regular boarders and roomers at this hotel any right to use this telephone? The instrument is located in the office in such a place that it is convenient for any one to use. The proprietor has no objections to the patrons of the hotel using it. The telephone company wants each person who is a regular boarder to pay a regular rate in order to have access to the instrument. Please advise whether a regular boarder has access to the telephone locally when the proprietor pays for it for his public customers."

It seems to us that in the absence of any rules and regulations to the contrary, a regular boarder has the same right to use a telephone that any member of the family has. It would be very difficult to distinguish between the use made of the telephone by the regular boarders and roomers from that made of it by the public customers. The company can, of course, adopt a regulation that all regular boarders and roomers at all hotels on its lines must pay a regular rate in order to have access to the instruments. If this rule is established by proper notice to all customers, we believe it could be enforced.

Fee for Asking for Subscriber.

"Can you refer me to any pamphlets or printed matter on the subject of whether or not it would be advisable to charge a small amount to ring up and see if the party at the other end can be found? I doubt not but that this has been discussed often, but I have never seen anything published."

We cannot refer you to any pamphlets or printed matter on this subject. It would be legal to charge such a fee if it were properly established as a rule and regulation of the company and due notice given of the existence of the rule to all the company's patrons. It does not seem to us that it would be good policy to charge for this service. The ordinary rates should be made high enough to cover the expense of doing this without charge. When patrons do not get the party whom they are seeking, they are very likely to be dissatisfied and reluctant to pay any charge. It is better to make them pay for this service by an additional amount when they do get the party sought, because they will then be in better humor and more willing to pay.

Contact Between Wire and Threshing Engine.

A threshing outfit, driven along a public highway, came in contact with a telephone wire suspended over the highway. The driver heard some one call out that he was against the wires. He stopped the engine at once and went forward on its running board to investigate the situation, when the wires broke loose and threw him down and he was injured.

He brought suit to recover for his injuries. The defense was made that the driver knew, when he stopped his engine, that the wires were caught against the smoke stack of the engine and likely to break any time and injure him. The court overruled this defense and sustained a verdict for the plaintiff. Stuhr vs. Wright County Telephone Co., 138 Northwestern 693.

Taxation.

The Massachusetts law relative to taxation of poles for wires has recently been construed by the supreme court of the state. The law declares that the value of underground conduits, wires, pipes and poles, and wires thereon in public streets or on private property, or in a railroad location by any corporation, except street railway companies, shall, for the purpose of taxation, like the wires and right of ways, be included in the value of their corporate franchises, except that the poles, conduits, wires and pipes of a railroad corporation laid in the location of a railroad shall be assessed in the cities or towns where laid or erected.

This statute, when considered in the light of the history of the legislation on the subject of local taxation and the acquisition of property by street railway companies, and in view of the state of the law at the time or the passage of the statute, is held to treat only of personal property. It does not exempt from local taxation, a bridge erected by a street railway company, on which it operates tracks, and a strip of land extending from the bridge to a highway used for the operation of street railways.

The court stated the general principle that the exemption from local taxation of the real estate of a public service corporation, exclusively devoted to the public use, as co-extensive with the right of eminent domain, or, having the right so to take, has purchased. Connecticut Valley Street Railway Co. vs. city of Northampton, 99 Northeastern, 517.

Company's Liability for Furnishing Gambling Information.

The law of Kentucky provides that if any person shall lose to another at one time, or within twenty-four hours, $5 or more, or property, or other thing of that value and shall pay the same, the loser, or any creditor of his, may recover the amount paid from the winner, or any transferree with notice of the consideration. An action was brought to recover $12,000 alleged to have been lost by wagering on horse races.

It was alleged that two telephone companies and a telegraph company furnished information of horse races to the man who won the money and by this wrongful conduct, enabled him to conduct a bet-making office in the city of Louisville. The court held that the plaintiff could not recover this money from the telephone and telegraph companies on the ground that it they were liable at all, they were guilty of aiding and abetting the operation of a poolroom. Hence, if subject to suit, could be sued only at the instance of the attorney general, and not at the suit of a private person who had lost the money by betting in the poolroom to which the information was furnished. Nicholson vs. Alvey, 150 Southwestern, 364.

Damages from Falling Over Guy Wire.

A telephone company is liable for personal injuries to a person falling in the dark over a guy wire in a street which had not been accepted or taken control of by the city, although used by owners of houses facing thereon for years. So it was decided in a Kentucky case where a telephone guy wire, placed near the street line along which a fence had fallen down and nothing but the posts remained, interfered with the safety of the street for travel.

The court held that the question of whether the guy wire made the street not reasonably safe for travel was for the jury. It was contended that the fact that the guy wire was on private property and not on the highway, relieved the company from liability. But the court stated the rule to be that dangerous obstructions placed so near a highway as to endanger persons traveling thereon are nuisances for which a recovery may be had by a person suffering injury.

In the case thus decided the court said that in the dark a person could not tell where the highway ended, or when he had reached the property line. Raines vs. East Tennessee Telephone Co., 150 Southwestern, 830.

Taxing Franchises.

The franchise granted by the act of Congress to the Postal Telegraph-Cable Co. only authorizes it to use the highways of the state, subject to charges imposed by the state. The right to use the highway without compensation is a privilege which is taxable as a franchise in each city and county in which the highways are located. In the city of Los Angeles, the company owned a state franchise in the streets of the city, which franchise was assessed as the "Franchise of the Postal Telegraph Co. in the City of Los Angeles."

The company paid the state a franchise tax, which it sued to recover back, claiming that it had been illegally paid. In the decision, the description of the franchise, above quoted, was held to refer to the state franchise alone and not to the Federal non-taxable franchise. The right to use the streets was held to be a franchise for the purpose of taxation. The description was held sufficient to describe it as a state franchise. The state law (Civ. Code Sec. 536) permitted telephone companies to construct lines upon any public highway. This law was held to be a continuing offer by the state, the acceptance of which

gives the company a right as to its state franchise, distinct from its federal franchise. Postal Telegraph-Cable Co. vs. City of Los Angeles, 128 Pacific, 19.

Pole Tax Set Aside.

The suit of the city of Springfield, Ill., against the Central Union Telephone Co. to collect an annual tax of $1 per year on each pole maintained by the company in the city, has been decided against the city. The case was decided at Carlinville by Judge Shirley. Several hundred dollars per annum was to be the amount of the tax.

Defects in Safety Belts.

A lineman was injured while working for a telephone company, on the construction of its lines. In clambing poles an appliance was used which consisted of a harness fitted to the body of the climber to which was attached straps which passed around the pole. These straps were fastened at the ends to the harness by means of metallic snaps, which, when in proper condition, were kept closed by springs. At the time of the accident, the lineman was working upon a pole at some distance from the ground. Owing to the movement of his body or for some other reason, one of the snaps, which it was alleged was out of order, came open, the encircling strap dropped away from the pole, and the lineman fell to the ground.

The lineman had had little experience according to the evidence with this safety belt. The defect in the snaps was not apparent at a glance and manual testing was necessary. The testimony showed that this weakness in the spring had existed for some time and that the lineman was not given notice of it when he was asked by the foreman to use the harness.

The court held that the case was one for a jury and reversed a decision directing a verdict for the company. Van-Duzer vs. Commonwealth Telephone Co. 84 Atlantic, 965.

Record of Telephone Patents Recently Issued

1,053,430. February 18, 1913. DETECTOR FOR PARTY LINE TELEPHONES; J. W. Nillson, Balfour, N. D. Apparatus for detecting the cutting in or out of a station on a party line. The movement of the receiver hook closes a circuit breaker which controls the circuit of a motor-operated disk. The operation of the disk actuates a buzzer in another circuit.

1,053,584. February 18, 1913. TRANSMITTER FOR SELECTIVE SIGNALING SYSTEMS; V. Durbine, Brookline, Mass.; assigned to Holtzer-Cabot Electric Co. Train dispatching equipment is operated by pulsating current which produces a step-by-step rotation of the selector.

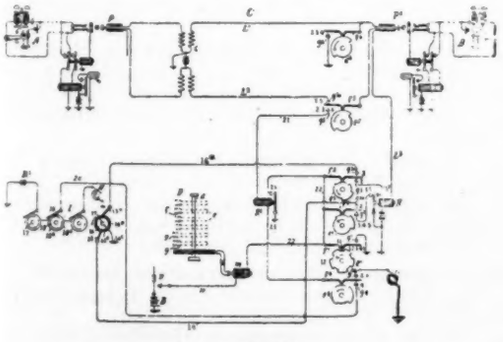
1,053,682. February 18, 1913. EXPANSION BOLT; C. B. Van Antwerp, Chicago. Describes a one piece, non-threaded shell having a conical plug inside for expanding the shell.

1,053,684. February 18, 1913. GROUND CLAMP; J. C. Vogel, Philadelphia. Device for attaching the ground wire to a water pipe by use of a strap band provided with means for tightening to the pipe.

1,053,849. February 18, 1913. AUTOMATIC TELEPHONE PAY STATION; Walter Milford, Syracuse, N. Y.; assigned to G. C. Yocum, Scranton, Pa. The top of the casing is provided with a plurality of coin slots connected to spirally arranged coin guideways having lateral openings for the escape of coins or slugs under a given size.

1,053,997. February 25, 1913. TELEPHONY; M. L. Johnson, Chicago; assigned to Corwin Telephone Mfg. Co. Describes especially the operator's switching equipment and a relay for excluding the operator's set from the circuit.

13,533. (Reissue of original patent 977,616, December 6, 1910.) February 18, 1913. TELEPHONE TRANSMITTER; Felix Gottschalk, Stirling, N. J.; assigned to Gottschalk Waterproof Sanitary Transmitter Co., New York. Describes the combination with a casing and a resistance cup, of a diaphragm and a spider. The extremities of spider's legs are attached to the diaphragm at points between the diaphragm's center and its periphery. The spider hub and front electrode are connected and means are provided for sending the telephone current through the resistance cup.

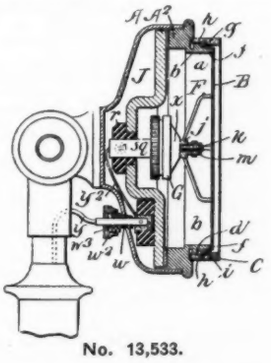


No. 1,055,863.

1,053,998. February 25, 1913. TELEPHONE EXCHANGE SYSTEM; M. L. Johnson, Chicago; assigned to Corwin Telephone Mfg. Co. Relates to the preliminary connection for the control of prepayment instruments.

1,054,176. February 25, 1913. TELEPHONY; E. R. Corwin, Chicago; assigned to Corwin Telephone Mfg. Co. Describes a semi-automatic system whereby communication may be established between parties on the same line without the aid of the central office.

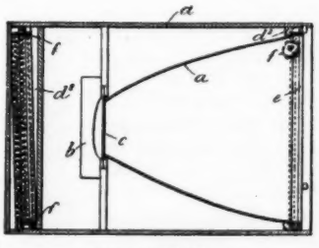
1,054,227. February 25, 1913. GROUND WIRE CONNECTOR; F. E. McKenna, Wauwatosa, Wis. The connector is of the pipe strap variety and has a U-shaped metallic tension member which provides means for attaching the wire to the pipe.



No. 13,533.

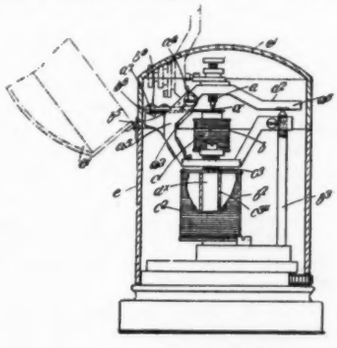
1,054,275. February 25, 1913. TELEPHONE SWITCHBOARD; P. C. Burns, Chicago. Describes removable switchboard jack units having provision for a simple connection of the night alarm circuit to all the line units.

1,054,581. February 25, 1913. TELEPHONIC TRANSMITTER; W. J. Marchant, London, Eng. The feature is a mouthpiece having a paraboloid shape with the end part cut away so that the rear edge of the horn terminates approximately in the focal plane of the paraboloid. The diaphragm is located so as to be in the focal plane.



No. 1,054,581.

1,054,750. March 4, 1913. CABLE HANGER; A. L. Cooper, Odessa, Mo. Comprises a wire having a hanger loop and eye at one end and a backwardly opening anchor loop at the other end. The anchor loop projects beneath the hanger loop and is spaced from the eye. Marline carried by the hanger loop is adapted for engagement with the anchor loop to close the hanger loop about the messenger strand.



No. 1,055,870.

1,054,784. March 4, 1913. ELECTRIC CABLE; F. B. McBerty, New Rochelle, N. Y.; assigned to Western Electric Co. Describes a flat, woven, multi-conductor cable having the insulation omitted from its wires for short spaces at intervals to expose the wires for connection, the cable being folded upon itself along the lines of omitted insulation.

1,054,887. March 4, 1913. AUTOMATIC TELEPHONE EXCHANGE SYSTEM; Friedrich Wohler, Hanover-Linden, Germany; assigned to Western Electric Co. Relates to automatic switches and a busy back testing outfit. The switches have a test contact for each line and a single test brush adapted to operate the release magnets of the testing switch or busy switch according to the relative resistance of the magnets and the potential impressed upon the test brush.

1,055,279. March 4, 1913. TELEPHONE RECORDING APPARATUS; S. B. Irvin, Los Angeles, Cal. Describes a recording mechanism operated by impulses received by a relay. A motor drives the receiving record tape only during the periods that the impulses are received.

1,055,305. March 4, 1913. TEST CONNECTOR FOR ELECTRIC WIRES; Arthur Kneisel, Cleveland, Ohio. An angularly bent metallic body portion is secured to other angularly bent metallic clips by means of small bolts, and so arranged as to clamp the wires firmly.

1,055,555. March 11, 1913. TRANSMITTER ATTACHMENT; C. R. Phillips, Richmond, Va.; assigned one-half to E. D. Farmer. Describes a mouthpiece disinfecting attachment.

1,055,863. March 11, 1913. TELEPHONE SIGNALING SYSTEM; W. G. Blauvelt, New York; assigned to American Telephone & Telegraph Co. Describes the combination with a substation telephone line, of automatic means for continuously applying signaling current to the substation line through one connection and for intermittently applying it through another connection.

1,055,870. March 11, 1913. TELEPHONY AND TELEGRAPHY; S. G. Brown, London, Eng. Relates to a microphone of special construction so that its resistance may be varied.

1,055,988. March 11, 1913. TELEPHONY; E. R. Corwin, Chicago. The feature is a direct current or series receiver having two low impedance windings in parallel with each other but in serial relation to the line. The energizing current is obtained from the central exchange.

1,055,989. March 11, 1913. TELEPHONY; E. R. Corwin, Chicago. Describes a receiver in which the diaphragm is supported by a pan in operative relation with the receiver core. The receiver core projects through the pan bottom into operative relation with the diaphragm. The core and bottom of the pan are so constructed as to have an interlocking engagement.

Condensed News Reports

Officers of Companies are Earnestly Requested to Forward Us Promptly All Financial and Other Statements as Soon as Issued, and Any Items of Interest as to Their Plants and Systems

E. C. CROWLEY has resigned his position as manager for the Inter-State Telephone Company at Morrison, Ill.

BERT ZEARFOSS, of Pukwana, S. D., has been appointed manager of the Mutual Telephone Co., at Traer, Iowa.

J. W. STODDARD has been appointed manager of the Ingham Township Mutual Telephone Co., at Dumont, Iowa.

A. J. BEVERLIN has been appointed commercial manager of the Rock Island, Ill., district of the Central Union Telephone Co.

W. L. GUSTIN has been appointed manager of the Farmers Telephone Co., at Snyder, Neb., to succeed H. H. Cruickshank, resigned.

JOSEPH JOHNSON has been made manager for the Inter-State Telephone Co. at Prophetstown, Ill., succeeding Glen Stanners, who was transferred to Morrison, Ill.

J. W. HOUSTON, formerly manager of the Home Telephone Co., at Owensboro, Ky., has been appointed manager of the Seymour Telephone Co., Seymour, Ind.

WILLIAM SANDERS has resigned his position as manager of the William Telephone Exchange, at Willis, Texas, R. E. Worsham, of Huntsville, will succeed him.

WM. BIEFELDT has resigned his position as manager of the Beecher, Ill., exchange of the Chicago Telephone Co. J. C. Wylie, of Chicago Heights, will succeed him.

FRANK P. CARSWELL, of Green Bay, Wis., has been appointed district manager of the Sterling, Ill., exchange of the Interstate Independent Telephone & Telegraph Co.

J. G. THOMAS, formerly chief clerk of the Vicksburg, Miss., office of the Cumberland Telephone & Telegraph Co., has been promoted to manager of the exchange at Monroe, La.

JOHN KOORDT has been promoted to the position of manager of the Alameda, Cal., district of the Pacific States Telephone & Telegraph Co., to succeed L. H. Jacoby resigned.

JAMES F. LUTTRELL, district manager of the Bell Telephone Co., at Chester, Pa., will be transferred to a like position in Atlantic City, N. J. He will be succeeded by J. A. Doyle, of Camden, N. J.

CARL M. TEVIS, manager of the Central Union Telephone Co.'s properties in Seymour, Ind., has been appointed manager for the Inter-State Telephone Co. at Elgin, Ill., to succeed George Galloway, resigned.

BURDETTE STRYKER, plant superintendent of the Harrisburg division of the Bell Telephone Co. of Penna., has been promoted to a similar position of the Pittsburgh division, with headquarters at Pittsburgh.

O. W. MOURER has been appointed manager of the Oregon, Ill., exchange of the Rock River Telephone Co. L. A. Mutton, manager of the Oregon exchange for seven or eight years, has been transferred to Rochelle where he holds a responsible position.

E. L. MAY, formerly local manager of the Bureau County Telephone Co., at Tiskilwa, Ill., has been appointed manager of the Manistique Telephone Co., at Manistique, Mich. Charles Henry has succeeded him at Tiskilwa.

J. N. TOLMAN, president of the Clark Fork Farmers Telephone Co., Belfry, Mont., stopped in at TELEPHONY's office recently while on an extensive trip to New York and Washington, and through Florida, Cuba and Jamaica.

EMILE BERLINER, of Washington, D. C., has been awarded one of the Elliott Cresson gold medals, bestowed by the Franklin Institute, in recognition of his important contributions to telephony and to the science and art of sound production.

GORDON JOHNSON, local manager of the Delavan, Wis., exchange, Wisconsin Telephone Co., has been promoted to the management of the company's exchange at Waukesha. Fred Manthi, of West Bend, Wis., succeeds Mr. Johnson at Delavan.

E. B. KELLAM, division commercial superintendent of the Missouri & Kansas Telephone Co., Kansas City, Mo., has resigned his position to give his attention to personal affairs. S. J. Bear, tax commissioner for the Bell company, will take his place.

J. D. HESS, JR., who has been commercial manager for the Michigan State Telephone Co., at Grand Rapids, Mich., for several years, has resigned to take a position on the executive staff of the Overland Sales Agency. Mr. Hess is succeeded by C. E. Waite.

THEODORE RICKSHER, of Fairfield, Iowa, has been placed in sole charge by the Automatic Electric Co., Chicago, of a development plan for the installation of the automatic telephone service in all the cities of Australia. Mr. Ricksher is now on his way to Australia.

In 1887 he invented the gramaphone, now known in America as the "Victor," for which he was awarded a John Scott medal by the city of Philadelphia, on the recommendation of the Franklin Institute. Mr. Berliner has also contributed largely to scientific and technical literature.

THOMAS BROWN, formerly district commercial manager of the Galesburg, Ill., district of the Central Union Telephone Co. has been transferred to the Kankakee, Ill., district. F. W. Kelly, manager of the local exchange at Galesburg, will be promoted to the position of district commercial manager, with headquarters in this city.

J. C. NOWELL, general superintendent of plant for the Bell Telephone Co. of Penna., has been elected general manager of the Pacific States Telephone & Telegraph Co., with headquarters at San Francisco, Cal. W. T. LaRoche, plant superintendent, of Philadelphia, has been appointed to fill the vacancy caused by Mr. Nowell's resignation. F. C. Moody, plant superintendent of the Harrisburg division, will take Mr. LaRoche's place at Philadelphia, and Mr. Moody will be succeeded at Harrisburg by H. B. Porter, of Philadelphia.